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DISEASES CAUSED BY BACTERIA AND FUNGI

NEAVE, F. K., SLOAN, J. K. B., & MATTICK A. T. R. (1944). **An outbreak of clinical mastitis involving 26 cows in a herd believed free from *Streptococcus agalactiae*. (The role of milking machines in mastitis).** —*Vet. Rec.* **56.** 349–351. **912**

The authors record an outbreak of clinical mastitis in a pedigree Dairy Shorthorn herd of 50–60 animals, occurring in the spring and summer of 1943. Routine three-monthly tests had shown the herd to be clear of *Str. agalactiae* infection since April 1942. In all, 26 cows developed clinical mastitis, but the majority of cases (15) occurred in the month of May. On October 1st, it was found that there was a partial vacuum in the milking machine used equivalent to 19½″ of mercury, although 15″ was recommended by the makers and was in fact, registered by the gauge. The authors attribute the outbreak to this increase in partial vacuum and suggest that after May, when the majority of cases occurred, the cows accustomed themselves to the new conditions. Others have reported similar outbreaks occurring where the partial vacuum of the machine used has been inadvertently or experimentally increased. To eliminate such outbreaks, the authors suggest that it is wise to avoid exceeding 15″ of vacuum at the gauge and also to ensure that machines have some type of air admission hole at the claw or teat-cup. Further, there should be at least two vacuum gauges and the vacuum-controlling apparatus should be regularly inspected.

No streptococcus group B organisms were recovered from any of these clinical cases. Bacteria were demonstrated in milk from only 13 of the 33 affected quarters and in six of these infection was not demonstrated during the first ten days. The majority of these contained large numbers of *Str. uberis*, and this organism, together with *Str. dysgalactiae* and haemolytic staphylococci, was known to be on the teats of the cows as early as February 1942. A difference in the invasive powers of different strains is suggested as a possible reason why *Str. uberis* should have invaded the udders and not *Str. dysgalactiae* or the staphylococci.

Although having no apparent effect in shortening the clinical syndrome as compared with untreated animals, sulphanilamide *per os* did appear to eliminate *Str. uberis* from clinically affected quarters but not from quarters not clinically affected. Samples from ten clinically affected quarters which were examined two weeks to four months after treatment were found free from bacteria, while samples from eight quarters with subclinical infection examined at the same time still contained streptococci.—H. I. FIELD.

MURPHY, J. M. (1944). **The relationship of teat patency to udder infection.**—*Cornell Vet.* **34.** 64–68. **913**

Patency [failure to close properly] was estimated by repeatedly applying sudden lateral pressure with the thumb and forefinger to the teat when full of milk. Following a single examination for patency 77 quarters (22 cows) out of 205 quarters (55 cows) were found to be patent and 50·7% of these were infected with streptococci or staphylococci, while only 32·1% non-patent quarters were so affected. Further work on 87 cows revealed that the majority of quarters showing evidence of patency failed to show it consistently when examined at intervals by this method. A higher incidence of infection, however, existed in these so-called "patent" quarters than in consistently non-patent quarters.

—H. WILLIAMS SMITH.

MURPHY, J. M., PFAU, K. O., LEPARD, O. L., & BARTLETT, J. W. (1944). **Comparison of the incidence of udder infection and mastitis in two cow families.**—*Cornell Vet.* **34.** 185–192. **914**

The mastitis histories of two families of cows, based on leucocyte counts, strip-cup tests, physical examination of the udder, and bacteriological tests, were studied for a period of six years. One family, composed of the dam, three daughters and two grand-daughters, was infected with streptococci during 24%, and with staphylococci during 39·3%, of its milking time; the other family, composed of the dam, four daughters and two grand-daughters, showed the comparable figures of 0·9% and 10·9% respectively. The above confirmed the relative susceptibility to mastitis of the one family. There was no significant difference in milk and butter-fat production of the two families.

It was concluded that heredity definitely plays a part in bovine udder infection and mastitis.—D. N. S.

GELY, R., & THIEULIN, G. (1943). L'inspection sanitaire du lait à l'étable en vue de la prophylaxie et du traitement des mammites et, en particulier, de la mammite streptococcique. **[Veterinary inspection at the farm for the control of mastitis].**—*Bull. Acad. vét. Fr.* **16.** 338–343. **915**

Milk should be inspected both in the byre and in the laboratory by simple and rapid measures, in order to protect the public from drinking unclean or unsafe milk, and in order to protect healthy cattle from infection by contact with cows already affected with mastitis. An efficient veterinary service should markedly reduce the incidence of contagious mastitis.—I. W. BROCKLEHURST.

ROACH, R. W. (1944). **The reliability of indirect field tests for the diagnosis of chronic contagious mastitis.** —*Vet. Rec.* **56.** 433–435. Discussion pp. 435–436. **916**

The reliability for diagnosis is discussed of the indicator, strip cup, chlorine, catalase, and Hotis tests, of palpation of the udder and of the leucocyte count of several hundred cows. While individual indirect

tests demonstrated only a small proportion of infected cows, a combination of tests detected a high percentage. The number of false positives with such a combination was, however, high, so that grave doubts are cast on their general practical value. Manual examination results in the greatest degree of error, individual anatomical variation in quarters of udders being so great that it is often impossible to distinguish between an infected and an uninfected udder. The strip cup is efficient only when used repeatedly, but then gives by far the fewest false positives. The bromcresol-purple test is useful only as an adjunct. The urgent need for a simple and accurate laboratory test for the diagnosis of mastitis milk is stressed.—D. D. OGILVIE.

SCHLOTTHAUER, C. F. (1944). **Bovine mastitis: its etiology, diagnosis and treatment.**—*N. Amer. Vet.* **25.** 84–90, & 155–162. **917**

A general discussion and an account of the author's experiences. A table is included classifying the organisms which S. isolated from 232 clinical cases of mastitis.—H. WILLIAMS SMITH.

FISK, R. T., & MORDVIN, O. E. (1944). **Studies on staphylococci. III. Further observations on bacteriophage typing of** *Staphylococcus aureus*.—*Amer. J. Hyg.* **40.** 232–238. [Authors' summary copied *verbatim*]. [For previous parts, see *V. B.* **14.** 113]. **918**

A series of 78 culture strains of *S. aureus* isolated from 30 patients was studied to compare certain culture characteristics and alpha hemotoxin production with bacteriophage susceptibility.

Strains of the same 'phage type sometimes differed in hemolytic properties and chromogenesis and not infrequently varied in toxogenicity.

Most of the cultures isolated from related sources were of the same 'phage type, but examples are given in which strains of dissimilar 'phage types were isolated from the same patient. The significance of these differences in 'phage susceptibility is discussed.

MIRSKY, I. A. (1944). **Inhibition of β hemolytic streptococci fibrinolysin by trypsin inhibitor (antiprotease).**—*Science.* **100.** 198–200. **919**

The fibrinolytic activity of β-haemolytic streptococci can be inhibited by preparations of pancreas or soya beans. The antiproteolytic material might be of use in control of streptococcal infections.—E. BOYLAND.

*BELTRAMI, B. (1942). Contributo alla conoscenza della setticemia diplococcica dei vitelli. **[Diplococcus septicaemia in calves].**—*Profilassi.* **15.** 65–69. [Abst. from abst. in *Jber. Vet.-Med.* **70.** 547]. **920**

B. observed a diplococcus septicaemia on the first day of life of calves, the animals often dying suddenly after a few hours' illness. P.M. examination showed enlargement of the spleen.—D. L. ROBARTS.

DOYLE, L. P. (1944). **A vibrio associated with swine dysentery.**—*Amer. J. vet. Res.* **5.** 3–5. **921**

D. reports the recovery of a vibrio in pure culture from the colon of swine affected with swine dysentry. When fed to susceptible pigs the organism produced diarrhoea.

A detailed description of the vibrio is not given, nor is its recovery reported from the experimentally infected pigs.—J. A. J. VENN.

RAJAGOPALAN, V. R. (1943). **Control of anthrax in domesticated animals.**—*Indian Fmg.* **4.** 525–526. **922**

R. stresses the necessity of controlling anthrax in India in the interest of the export trade in animal products. In India, where cattle movements are unrestricted, the disease can be controlled only by proper vaccination. A spore vaccine is recommended, made according to Sterne's technique, from avirulent variants derived from virulent strains. It is claimed that this vaccine is effective in cattle, sheep, goats, camels, elephants, ponies, and mules and gives a high immunity for one season.—N. S. SANKARANARAYAN (INDIA).

NOGAREV, V. S. (1935). Opyty po izucheniyu mestnovo tkanevovo immuniteta pri sibirskoĭ yazve v svyazi s ucheniem prof. Bezredka. **[Studies on Besredka's local tissue immunity in anthrax].**—*Trud. Ural'sk. vet.-zootekh. Inst.* No. 1. pp. 91–98. **923**

The intradermal inoculation of rabbits with TSENKOVSKIĬ'S anthrax vaccines produced for the first three days only a local skin immunity which became generalized after 12–14 days. Three days after intradermal vaccination rabbits were susceptible to subcutaneous infection and became immune only after 12–14 days. N. considers BESREDKA'S view, that outbreaks of anthrax can be controlled by intradermal vaccination, to be erroneous, as during the first days after intradermal vaccination the animals may become infected by routes other than the skin. There are no important differences between the susceptibility of animals vaccinated by intradermal inoculation and of those vaccinated by other routes. The whole body is susceptible and plays a role in the development of immunity.—A. MOLDAWSKY.

STAMP, J. T. (1944). **A review of the pathogenesis and pathology of bovine tuberculosis with special reference to practical problems.**—*Vet. Rec.* **56.** 443–446. **924**

A discussion on certain aspects of the question, including the pathogenesis and morbid anatomy of TB. in the calf and adult bovine, meat inspection, the prevention of spread of TB. in a herd by the elimination of "open" cases, the significance of the bovine type of infection in man, and tuberculous mastitis.

—H. SCOTT MCTAGGART.

VAN DEINSE, F. (1943). Epanchements pleuraux chez le cobaye a la suite de l'inoculation médiastinale de bacilles tuberculeux. **[Pleural effusions in g. pigs after mediastinal inoculation of tubercle bacilli].**—*Ann. Inst. Pasteur.* **69.** 1–12. **925**

The author reviews the literature concerning pleural effusion in tuberculous g. pigs and discusses the opposing theories of its aetiology, particularly the possibility of its being a manifestation of allergy.

In the author's experiments, 58 g. pigs were inoculated into the mediastinum (technique described) with various strains of *Mycobacterium tuberculosis*. Thirty-seven of the g. pigs developed a pleural effusion, the more virulent strains producing effusions the most constantly. The pathogenesis of the disease produced was similar to that resulting from intravenous inoculation. With a dose of 1–2 mg. of virulent bovine type tubercle bacilli, death occurred in 7–25 days and with 1–2 mg. human type bacilli, in 20–36 days. The effusion sometimes appeared on the day following injection, but sometimes did not occur before 8–10 days; it then caused dyspnoea and sometimes even asphyxia if the g. pigs were handled.

Where there was effusion the lungs had collapsed and might be hepatized and show caseous granulations; pleural adhesions, however, were rare. The mediastinal, suprasternal and sometimes other lymph nodes showed caseous lesions. The spleen was usually enlarged, the liver congested, and a fine network of yellow streaks could be seen; the adrenals were congested and hypertrophied, and there was interstitial nephritis.

Histologically, the reaction was exudative; there was an invasion of neutrophiles into the mediastinum in the first 24 hours, but later abscess formation and epithelioid and sometimes giant cells occurred. The general pleural reaction was noticeably slight, with no

hyperplasia or desquamation of the pleural endothelium.

When smaller doses (0·01 mg.) were used, the effects were similar with virulent organisms, but the survival time was longer and pleural effusions were usually reabsorbed.

Injection of attenuated organisms gave variable results. The rapidity with which effusions can appear indicates that an existing allergic state is not necessary for their production.

The fluid exudate varied in appearance from sanguinolent to clear, in the latter case giving a positive Rivolta reaction. Some samples coagulated on standing.

Smears of deposits obtained by centrifuging exudates revealed lymphocytes predominently, with some polymorphs and monocytes. Acid-fast organisms were found in only a third of the cases, but TB. was demonstrated in two-thirds by culture, and in four-fifths of the cases by animal inoculation.

The alleged toxicity of pleural effusions to g. pigs could not be demonstrated, nor could their alleged bactericidal action; in fact, growth of *Mycobact. tuberculosis* occurred in samples of effusion incubated at 37°C.—R. M. Arnold.

Berthelot, A., Nègre, L., & Bretey, J. (1944). Inhibition par le succinate d'éthyle de l'influence aggravante des injections d'huile d'olive sur la tuberculose du cobaye. [**Inhibition by ethyl succinate of the aggravating influence of injections of olive oil on tuberculosis in the g. pig**].—*C. R. Soc. Biol. Paris.* **138.** 14–15. **926**

Injections of 0·5 g. ethyl succinate into g. pigs reduces the activating effect of olive oil on the progress of TB. Similar injections have no effect on the analagous aggravating actions of glycerol, glucose or of an acetone extract of tubercle bacilli.—E. Boyland.

Bruce, E. A. (1943). **Ophthalmia of sheep caused by Cornyebacterium enzymicum and its transmission to man.**—*Canad. J. comp. Med.* **7.** 369–371. **927**

A severe outbreak of infectious ophthalmia was investigated in the lower Fraser Valley of British Columbia. Among 468 sheep, 160 deaths had occurred and 250 others were affected; forty more subsequently died. The initial lesion was conjunctivitis involving the lower lid, but this rapidly spread to the deeper structures and in many cases the eye resembled a furuncle. Many eyes were under great interocular pressure and of a yellowish orange hue. In addition to the eye changes, the other lesion was pneumonia, and there was sometimes a gelatinous deposit or greenish pus around the pericardial sac. Many of the survivors were totally blind. Some animals may have died of starvation, but death was usually due to secondary infection with *Pseudomonas aeruginosa*; a great variety of organisms was found in the affected eyes but *Ps. aeruginosa* was present fairly constantly. The causative agent, *Corynebact. enzymicum*, appeared as barred bacilli or as diplococci. During the experimental work, B.'s eyes became infected. Treatment with boracic acid solution and 20% argyrol was employed and the infection cleared up after a week. The same treatment was subsequently used for the sheep, but could not be used often enough to be effective owing to the number of animals affected.—R. Gwatkin (Canada).

Viera, O., & Castelo, M. (1944). Listerella monocytógenes en cobayo. [*Listeria monocytogenes* **infection in a guinea pig**].—*Rev. Med. vet., B. Aires.* **26.** 127–130. **928**

Listeria monocytogenes was isolated from a g. pig in the animal house of the Institute of Experimental Hygiene, Montevideo, Uruguay. [There is no indication of the source of the infection.]—I. W. B.

Allott, E. N., Cruickshank, R., Cyrlas-Williams, R., Glass, V., Meyer, I. H., Straker, E. A., & Tee, G. (1944). **Infection of cat-bite and dog-bite wounds with** *Pasteurella septica*.—*J. Path. Bact.* **56.** 411–415. **929**

Past. septica was shown to be the cause of abscess formation and subacute osteomyelitis in a series of cases of wound infection in man resulting from the bites of dogs and cats. Three of the six cases dealt with by the authors were caused by dog-bites. The occurrence of pasteurella infection under these circumstances has not been previously reported.—J. Keppie.

Rosenwald, A. S., & Dickinson, E. M. (1944). **A report on Pasteurella pseudotuberculosis infection in turkeys.**—*Amer. J. vet. Res.* **5.** 246–249. **930**

This infection has not previously been reported in birds in the U.S.A. Over a 20-month period the authors isolated *Past. pseudotuberculosis* from 15 turkeys in ten different flocks.

The morbidity was high, but mortality was low. The infection was considered to have caused the deaths of 122 turkeys out of a total of 13,250 and also to have contributed to the loss of 500 out of a total of 2,700 younger poults. The affected birds in all but one flock were young turkeys 3–8 months old. Sick birds were droopy and exhibited anorexia and diarrhoea; a few became lame.

P.M. findings were not constant. The commonest lesions were soft, necrotic or infiltrated miliary areas in the liver and sometimes in the spleen. Discoloration of the kidneys and catarrhal and haemorrhagic enteritis were also noted. The organism was generally isolated from the liver and less frequently from the spleen and heart blood.—J. D. Blaxland.

Johnson, H. N. (1944). **Natural occurrence of tularemia in dogs used as a source of canine distemper virus.**—*J. Lab. clin. Med.* **29.** 906–915. **931**

A report of the isolation of *Pasteurella tularensis* from dog-spleen tissue used for the production of canine distemper vaccine. The organism was only recovered following animal inoculation and culture on blood glucose cystine agar. A detailed account is given of the condition produced following inoculation by different routes into dogs, cats, mice, baby chicks, g. pigs, hamsters, rabbits, and ferrets. The symptoms produced in dogs are stated to be similar to those of canine distemper, cross-immunity tests showing the conditions to be distinct. A limited study of contact infection gave negative results. It is suggested that the routine testing of canine distemper virus material should include intracerebral inoculation of g. pigs or mice and culture on blood glucose cystine agar.—W. M. H.

Vickers, G. S. (1941). **The importance of multiple testing in pullorum disease control.**—*Conf. nat. Poult. Improvement Plan, 1941.* pp. 99–104. Discussion pp. 105–106. Washington, D.C.: U.S. Dep. Agric. **932**

The information given is taken from the records of flocks and hatcheries participating in the National Poultry Improvement Plan in Ohio. The data involve some 600,000–700,000 birds and extend over three breeding seasons from 1936–40. The statistics show conclusively that multiple or repeated re-testing is required to eliminate infection in a flock showing a high percentage of reactors at the first test. For example, if flocks tested three times had been tested only once, there would have remained in the flocks, 10·9% infected birds that failed to react at the first test. The question is bound up with the tolerance level, that is the percentage number of reactors allowed in flocks participating in the scheme. It is shown that the lower the

tolerance allowed, the less infection there is left in the flocks the following year, and it follows that the lower the tolerance level adopted, the greater the number of re-tests necessary for flocks to qualify. The association with which V. is concerned has gradually lowered the tolerance level through successive stages of 10, 8, 7, and 5%. He considers that the data would justify further lowering of the tolerance as the most practical means of controlling the disease. Two interesting points in his statistics are (1) that in over 700,000 birds tested the heavy breeds showed 2–3 times the amount of infection found in White Leghorns, and (2), that the rapid whole-blood test was as valuable as the tube test in the elimination of carriers.—R. F. GORDON.

I. —. (1941). **Circular letter no. 2312 to licensed producers of pullorum disease stained antigen.** pp. 3. Washington, D.C.: Bureau of Animal Industry, U.S. Department of Agriculture. [4to]. [Mimeographed]. **933**

II. MACDONALD, A. D. (1941). **Recent developments in pullorum antigens for the rapid, whole-blood test.**—*Conf. nat. Poult. Improvement Plan, 1941.* pp. 122–127. Washington, D.C.: U.S. Dep. Agric. **934**

I. This discusses in detail the culture media required and the method of production of the new stained antigen for the rapid whole-blood agglutination test for pullorum disease. The medium used is a special beef-infusion agar containing 2% glycerin, 0·5% sodium thiosulphate, 0·5% ammonium chloride, and 2% peptone. Stock cultures are maintained on plain agar and after preliminary transplants on agar plates, S colonies are transferred to beef-infusion broth. After 24 hours' incubation at 37·5°C., 1 ml. of the beef infusion broth is seeded on 300 ml. Erlenmeyer flasks containing 100 ml. of the beef-infusion agar. After 6 days' incubation at 37·5°C., the growth is harvested by washing off with 20 ml. of normal saline containing 1% U.S.P. liquor formaldehyde. The suspension is filtered through thin layers of cottonwool in a Buchner funnel and the density adjusted to 75 times tube number 1 of the McFarland scale. 0·05% potassium persulphate and 0·32% anhydrous disodium phosphate are added and allowed to dissolve, and finally 3 ml. of a 1% aqueous solution of crystal violet are added to each 100 ml. of the standardized suspension.

The antigen is called the "T.G. Formula Pullorum Disease Stained Antigen" and has been released for optional production and use subject to the same control now exercised over the regular stained antigen.

II. Preliminary investigations have shown that pullorum stained antigen prepared by the T.G. formula [see I] for all practical purposes eliminates pin-point reactions, that pin-point reactors as a class are not infected with *Salmonella pullorum*, and that the tube and T.G. antigen tests agree more closely than the tube and ordinary stained antigen tests. These findings are based on comparative tests on 116 birds using T.G. antigen, regular stained antigen, and the tube test. The birds were finally slaughtered and examined culturally for the presence of *S. pullorum*. There were 80 pin-point reactors to the regular antigen only, but only three to the T.G. antigen, and *S. pullorum* was isolated from only one of these pin-point reactors. Reports from state officials have also been favourable to the T.G. antigen, and investigations regarding hatchability and livability of chicks from pin-point reactors indicate that as a class the latter are not a potential source of pullorum disease.—R. F. GORDON.

QUIROGA, S. S., & MONTEVERDE, J. J. (1944). Contribución al diagnóstico serológico de las salmonelas. **[Serological identification of salmonella strains].**—*Rev. Med. vet., B. Aires.* **26.** 204–221. **935**

Lists are given of the salmonella and the agglutinating sera kept at the bacteriological laboratory of the Institute of Infectious Diseases in Buenos Aires. The standard strains of salmonella are listed, together with details of their antigenic formulae. The serum collection contains unabsorbed flagellar and somatic sera, and sera absorbed so as to contain only one antigenic factor.

—ISOBEL W. BROCKLEHURST.

FELSENFELD, O., & YOUNG, V. M. (1944). **The occurrence of members of the genus Salmonella in inhabitants of state hospitals of the greater Chicago area.**—*J. Lab. clin. Med.* **29.** 375–382. **936**

During a period of one year, 13,000 faecal specimens from inhabitants of state hospitals in the greater Chicago area were examined for the presence of salmonella, and a total of 65 strains was isolated and identified.

The isolation is recorded, for the first time in America, of *S. dar-es-salaam*, *S. kirkee*, and *S. ballerup*. Although *S. pullorum* was isolated from the faeces of six adults suffering from diarrhoea, it was not possible to determine whether this organism was the causal agent or whether it was secondary to some other factor causing enteritis. The patients recovered in 2–3 weeks after treatment with sulfasuxidine. Among the less common types isolated from carriers only, were *S. paratyphi* B animal strain, *S. paratyphi* B var. *java*, *S. newport* var. *puerto rico*, *S. newington* and *S. kentucky*.—A. BUXTON.

CRAWFORD, A. B. (1944). **Experiences in the control of contagious abortion of cattle in the United States.** —*Vet. J.* **100.** 200–209. **937**

C. outlines the various methods of control which have been adopted in the U.S.A., giving the reasons for their introduction or withdrawal. The test and slaughter method was well suited to the conditions existing in 1931 and 1932, combined with the general lack of success in the indiscriminate use of the live vaccines available at that time. Its effectiveness has been greatly augmented by the area plan of eradication. During recent years, strain 19 vaccination had shown promising results and with the outbreak of war and the necessity for increased food production, its use has been greatly extended. The results achieved by the use of strain 19 vaccine are described and evidence is given of its stability and safety in use. The issue of the vaccine is controlled by the Bureau of Animal Industry which issues cultures to approved commercial firms and inspects the vaccines produced. The resistance produced by the vaccination of adult cattle is at least equal to that produced in calves, but the agglutination response tends to persist and so to interfere with the operation of the Federal-state eradication programme. Within this programme, the chief use of the vaccine is in cases of early infection in pure-bred herds where valuable blood lines are involved. Its application also appears logical in beef cattle maintained under range conditions. Pregnant cows vaccinated from the fifth month onwards may abort, but it is considered that such abortions have less serious results than those due to virulent strains, since strain 19 disappears from the genital tract and udder before the succeeding pregnancy. The question of vaccination of adult cattle appears to be one of expediency, and the conditions and type of herd require consideration. The length of persistence of immunity in vaccinated animals has not been definitely established; it appears to persist longest where animals are continuously exposed to infection. Experiments are at present in progress to ascertain the persistence of vaccinal immunity. Investigation is also being made into intradermal vaccination which, if effective, would lower the cost of the procedure.

In general, the methods of control of bovine rucellosis are left to the discretion of livestock officials f the various states. Efforts are being made to minimize ne discrepancies due to the resulting lack of uniformity. The ultimate aim of the Bureau, however, is to eradicate rucellosis of cattle, and slaughter of infected animals nust be the final procedure. Vaccination is especially pplicable during the war period but in the postwar eriod the official programme can be resumed in full. —S. J. GILBERT.

*OLSON, Å. (1943). Förlossningshygien och efterbördskontroll— två viktiga detaljer i kastsjukebekämpandet. [**Stall hygiene and disposal of the placenta; important details in the control of contagious abortion**].—*Svensk VetTidskr.* **48.** 166. [Abst. from abst. in *Norsk VetTidsskr.* **55.** 334]. **938**

Orthodox advice on the hygienic management of parturition in infected and uninfected cows is given. O. found that 50 out of 334 (15%) placentae from reacting cows contained *Brucella abortus*, and 24 out of 743 (3%) from uninfected cows, as judged by the blood test.—J. E.

*ALBIEN. (1942). Neue Wege zur Bekämpfung des seuchenhaften Verkalbens. [**Bovine brucellosis control**].—*Dtsch. SchlachthZtg.* **42.** 240–243. [Abst. from abst. in *Jber. Vet.-Med.* **70.** 549]. **939**

A discussion on the significance of positive and negative serological reactions to brucella antigen, particularly with regard to information concerning the presence or absence of infection at the time when the blood sample is taken.—D. L. ROBARTS.

MILNE, A. H. (1943–44). **Brucellosis.**—*E. Afr. med. J.* **20.** 414–422, & **21.** 24–30. **940**

A useful account of brucellosis, especially of bovine contagious abortion. No new material is presented. —S. J. GILBERT.

HUTCHINGS, L. M., DELEZ, A. L., & DONHAM, C. R. (1944). **Studies on brucellosis of swine : I. Infection experiments with weanling pigs.**—*Amer. J. vet. Res.* **5.** 195–208. **941**

Sixty weaned pigs of both sexes were divided into six groups of ten each and exposed to infection with a polyvalent suspension of *Br. suis* by six different routes, the doses by the different routes not, however, being uniform. Non-infected weaned pigs were added to various groups.

A high percentage was readily infected through various channels. Instillation on to the conjunctiva and prepuce appeared to be less satisfactory than infection *per rectum*, *per os*, *per vaginam* or by subcutaneous or intravenous injection. The females used for breeding all carried their litters to full term and *Br. suis* was not recovered from foetal membranes, colostrum or from newborn pigs. In some cases, newborn pigs of those sows acquired temporary agglutinins from the colostrum. Agglutination methods as employed for brucellosis in swine appear adequate as a herd diagnostic procedure but may not be sufficiently reliable as a basis of diagnosis in individual pigs. In some cases *Br. suis* was obtained from the blood as long as two months before significant agglutinins appeared in the blood. The non-infected in-contact pigs remained negative throughout.—S. J. G.

*MUSSI, G. (1942). Indagine sulla frequenza dell'aborto umano da brucellosi in provincia di Brescia. [**Abortion in women in Brescia Province as a result of brucellosis**].—*Ann. Ostet. Ginec.* **64.** 665–682. [Abst. from abst. in *Jber. Vet.-Med.* **70.** 548]. **942**

The sera of five out of 600 women who had aborted without demonstrable cause gave positive agglutination reactions with brucella antigen.—D. L. ROBARTS.

STEWARD, J. S. (1944). **Malignant oedema in swine : probably due to Clostridium septicum.**—*Vet. Rec.* **56.** 321–322. Discussion pp. 322–323. **943**

S. describes for the first time in Great Britain nine cases of malignant oedema (anaerobic myositis, gas gangrene) in pigs. The cases were distributed among five farms and were encountered in two successive years during the months of December to March. The haemorrhagic and oedematous lesion was located either in the throat region or in one of the limbs. One case also revealed a braxy-like lesion in the stomach. Rapid onset of putrefaction and an emphysematous degeneration of the liver were characteristic features, and the latter may be an aid to diagnosis. In five of the cases, the microscopic examination of smears showed organisms morphologically identical with *Cl. septicum* and, in two of these, laboratory tests were used to confirm the presence of this organism. The formation of gas in the affected muscle was less than that seen in cases of blackleg in cattle. Malignant oedema affecting the throat region could be distinguished from anthrax by examination of smears and by the presence of haemorrhagic oedema and some degree of emphysema. A review of the literature confirmed S.'s impression that swine fever infection in a herd increases the susceptibility of the pigs to *Cl. septicum*, probably by permitting invasion from the alimentary tract. Other cases in the present series occurred in herds not infected with S.F., and superficial wounds appeared to be the path of infection.—J. KEPPIE.

GUILLAUMIE, M., KREGUER, A., & FABRE, M. (1944). Activité antitoxique des sérums anti-*perfringens*. [**Antitoxic potency of** *Clostridium welchii*].—*C. R. Soc. Biol. Paris.* **138.** 28–29. **944**

Seven samples of toxin were prepared from a single strain of *Cl. welchii*. Each sample was used in the titration of two *Cl. welchii* antisera, by the mouse protection method.

The antitoxic titres for the first serum varied from 35–150 units, according to the sample of toxin used. The titres for the second serum varied from 65–200 units.

Similar discrepancies have already been noted many times with the toxins of another strain of *Cl. welchii*. Thus, two strains of this organism have been found, which, as a result of variation in toxin production, influence the results of titrations of *Cl. welchii* antisera tested by the intravenous injection of mice. —I. W. BROCKLEHURST.

LAMPEN, J. O., & PETERSON, W. H. (1943). **Growth factor requirements of clostridia.**—*Arch. Biochem.* **2.** 443–449. **945**

The effect of fixed amounts of biotin and *p*-aminobenzoic acid on the growth of certain clostridia was studied. One strain of *Cl. tetani* grew well with the addition of biotin alone, but three other strains gave no response. One strain of *Cl. sporogenes* required only biotin, but three other strains of this species and also *Cl. tertium* failed to grow even when both biotin and P.A.B. were added. Certain strains of *Cl. acetobutylicum* and *Cl. butylicum* required both the factors for maximum growth.—J. KEPPIE.

MCCLEAN, D., & ROGERS, H. J. (1944). **Detection of bacterial enzymes in infected tissues.**—*Lancet.* **247.** 434–436. **946**

Detection of the bacterial enzymes, hyaluronidase and lecithinase in infected tissue fluids is of value in diagnosing cases of gas gangrene. The administration of antitoxin following infection suppresses the production of the enzymes in the tissues. The production of hyaluronidase and lecithinase in gas gangrene is not influenced by the presence of proteolytic enzymes. In

Clostridium histolyticum infection, the addition of a non-lethal streptococcus and hyaluronidase may accelerate the lethal effect.—E. BOYLAND.

WILTSHIRE, S. P., WILCOCKS, C., & DUNCAN, J. T. (1944). **An annotated bibliography of medical mycology, 1943.** pp. 32. Kew, Surrey: Imperial Mycological Institute. [8vo] [5s.] **947**

The literature on medical mycology is widely scattered and frequently difficult to consult. Certain aspects of the subject are covered by various abstracting journals, but no journal covers them all. For over 20 years, the *Review of Applied Mycology* has contained abstracts of papers dealing chiefly with the systematic aspect.

This new annotated bibliography aims at surveying the field completely. It is anticipated that it will be issued annually.

THURINGER, J. M. (1944). **Histoplasmosis. Report of its occurrence in a dog.**—*Arch. Path.* **37.** 140–142. **948**

This is an account of the second recorded case of histoplasmosis in the dog. The first case was described by de MONBREUN & ANDERSON [*V. B.* **11.** 159.] and the organism, *Histoplasma capsulatum*, was isolated from the liver during life. The present case is of special interest because the superficial lymph nodes were greatly enlarged, particularly the axillary and sublingual nodes, and the clinical diagnosis was Hodgkin's disease. Autopsy showed enlargement of all lymph nodes, the spleen was about twice the normal size, and the lungs showed a few small nodular areas of consolidation. There was a generalized hyperplasia of both reticular and lymphoid elements and the causal organisms were found both within and between cells. Organisms were also found within mononuclear cells in the liver and lungs. The possibility is mentioned that the dog might serve as a natural host of the parasite and transmit the infection either directly or indirectly to man.—E. G. WHITE.

WAKSMAN, S. A., & HENRICI, A. T. (1943). **The nomenclature and classification of the actinomycetes.**—*J. Bact.* **46.** 337–341. **949**

The following nomenclature and classification of the Actinomycetales is proposed.

A. Mycelium rudimentary or absent.
  Family Mycobacteriaceae Chester.
  I. Acid-fast organisms.
    Mycobacterium Lehman & Neumann.
B. True mycelium produced.
  I. Vegetative mycelium fragments into bacillary or coccoid elements.
    Family Actinomycetaceae Buchanan.
    a. Anaerobic or micro-aerophilic, parasitic, not acid-fast.
      Actinomyces Harz.
    b. Aerobic, partially acid-fast or non-acid-fast.
      Nocardia Trevisan.
  II. Vegetative mycelium not fragmenting into bacillary or coccoid elements.
    Family Streptomycetaceae Waksman and Henrici.
    a. Multiplication by conidia in chains from aerial hyphae.
      Streptomyces Waksman and Henrici.
    b. Multiplication by single terminal spores on short sporophores.
      Micromonospora Ørskov.

—ISOBEL W. BROCKLEHURST.

GOPALKRISHNAN, V. R. (1943). **The occurrence of bovine contagious pleuropneumonia in Assam.**—*Indian J. vet. Sci.* **13.** 287–293. **950**

A record of field investigations in 1940–43 with particular reference to incidence and epizoology. The disease is said to rank almost next in importance to rinderpest. It was investigated in three districts of the Brahmaputra valley, to which it appears to be confined: table 1 lists 13 affected areas in five districts. Most of this area has extensive forest grazing and low-lying marshy tracts inundated during the monsoon. Outbreaks may occur shortly after onset of the monsoon, but there is otherwise no seasonal incidence. Evidence is said to suggest the possibility of endemic and soil-borne infection in some outbreaks, but no details are given to support this statement. The disease is said to be periodic in certain areas and to spread insidiously in herds during 4–6 and occasionally 12 months. Mortality is initially low, but eventually totals 60–70%. Cattle of all ages are susceptible and the disease has been observed in buffaloes [no data], but not in sheep and goats. The first outbreak investigated (1940) affected 220 cattle in an upland grazing tract with 46 cases and 30 deaths. The origin of the outbreak is discussed. The second outbreak investigated (1941) was in an area 300 miles away and involved 450 cattle including 150 buffaloes: 24 animals were affected, with 15 deaths. The third outbreak investigated (1942) involved 700 cattle including 30 buffaloes in three adjacent villages situated in a marshy tract [not indicated on the map given]; 100 cattle were affected, of which 70 died within 3 months, the outbreak lasting for a year. This area is said to have been affected in 1913–14 and in 1934–35 and it is stated that some localities had suffered severe irregular losses. The symptoms and lesions found P.M. are described in detail. Transmission experiments with crude lymph were attempted on cattle and goats; subcutaneous inoculation in calves produced typical swellings; on P.M. examination, lung lesions were "not prominent". One goat inoculated subcutaneously showed a transient swelling. Lymph from lesions was insufflated into the nostrils of two goats and they were kept with sick cattle but they remained healthy. Pasteurella were occasionally observed but considered of no importance. The pleuro-pneumonia organism was isolated at the Imperial Veterinary Research Institute from 2 out of 3 outbreaks mentioned in the text. Fifteen cattle were treated with novarsenobillon and 10 recovered, and the results are said to be encouraging. [The cattle population in the Brahmaputra valley area is over 4 millions. Since 1940, according to data, among 1,370 cattle in 3 widely-separated areas, there were only 170 cases with 115 deaths; thus it is doubtful whether the entire tract (over 1,000 square miles in extent) is heavily infected and if this disease is second in importance to rinderpest, nor does there appear proof for the alleged existence of the disease in Assam since 1913–14 or perhaps earlier. Except for two outbreaks diagnosed at the Imperial Veterinary Research Institute by isolating the specific organism, field diagnosis has been based, apart from one case where animal inoculation tests were carried out, on clinical and P.M. findings. It is not stated how differential diagnosis between bovine contagious pleuro-pneumonia and other types of pneumonia is established. There appears no justification for the statement that Assam is the only affected province in India.—J. F. SHIRLAW (INDIA).

MCILWAIN, H., & HUGHES, D. E. (1944). **Biochemical characterization of the actions of chemotherapeutic agents. 2. A reaction of haemolytic streptococci, involving pantothenate-usage, inhibited by pantoyltaurine, and associated with carbohydrate metabolism.**—*Biochem. J.* **38.** 187–195. [For part I, see *V. B.* **14.** 410]. **951**

Four strains of streptococci caused pantothenate to

isappear from media in which they were kept. The tilization of pantothenate was involved with metabolism f the organisms. If glucose metabolism was inhibited he pantothenate utilization was stopped. Pantoylaurine, on the other hand, prevented the disappearance f pantothenate without interfering with carbohydrate netabolism.—E. BOYLAND.

See also absts. **1092** (mastitis), **1105** (staphylococci), **1034** (tick pyaemia), **1000** (navel-ill, strangles, swine plague), **1007** (tularaemia), **997** (pasteurella, colon-typhoid group), **1091** (coliform organisms, clostridia), **1106** (salmonella), **1100**, **1119** (*S. pullorum*), **1061** (TB.), **1086**, **1087** (*Bacillus anthracis*), **1068** (*Pseudomonas aeruginosa* in bulls), **989** (*Chromobact. prodigiosum*), **1001**, **1002** (*brucellosis*), **1132** (in Bengal), **1118** (control in N. Ireland), **1139**, **1140** (in N. Rhodesia), **1141** (in Michigan), **1113** (cultivation of bacteria), **1101** (ringworm).

DISEASES CAUSED BY PROTOZOAN PARASITES

HOARE, C. A. (1943). **Biological races in parasitic protozoa.**—*Biol. Rev.* **18.** 137–144. **952**

Organisms are grouped in species or lower taxonomic categories according to the degree to which they exhibit structural differences. There are also differences n biological characters in forms which appear morphologically identical, and the systematist who is ignorant of these biological differences would include what are actually separate biological races within a single taxonomic group. The features associated with biological races vary considerably, but are usually connected with ecological preferences. Biological races occur among parasitic protozoa, but few biologists are aware of their existence; the best known examples are pathogenic parasites of man and domestic animals and, in view of their medical and veterinary importance, the clinical and pathological aspects of infections with such protozoa have unduly influenced their classification. Examples of biological races in parasitic protozoa are unevenly distributed among various systematic groups, and consequently H. considers them according to the abundance and variety of types of biological divergence, rather than systematically. The great majority of biological races occur among the blood-inhibiting protozoa. Certain haemoflagellates, the trypanosomes and leishmanias exhibit such biological differentiation.

Amongst the trypanosomes the three species, *T. gambiense*, *T. rhodesiense*, and *T. brucei* afford the best known examples. *T. gambiense* and *T. rhodesiense* cause two types of human sleeping sickness in tropical Africa; *T. brucei* is responsible for nagana in hoofed animals. The three trypanosomes are identical in morphology and the only difference between them lies in their host relations. All three are infective to various mammals, but only *T. gambiense* and *T. rhodesiense* are able to infect man, whilst *T. brucei* is restricted to other mammals. *T. gambiense* and *T. rhodesiense* differ from one another in certain physiological features such as virulence. *T. gambiense* produces classical sleeping sickness, typically a chronic disease, with well marked nervous symptoms, whereas *T. rhodesiense* causes acute disease not involving the central nervous system but with toxic symptoms. In laboratory experiments, the behaviour of the two trypanosomes differs. *T. rhodesiense* is very virulent in rodent infections; *T. gambiense* does not readily infect rodents. *T. brucei* behaves like *T. rhodesiense* in experimental animals, which fact points to its closer relationship with this species. The knowledge so far gained points to the conclusion that the three types of the *brucei* group, though assigned to different species, are actually biological races of one and the same species, *T. brucei*. The human trypanosomes have originated from *T. brucei*, and probably from some antelope strain. *T. gambiense* had probably established itself in man long before *T. rhodesiense*, which has only recently evolved from *T. brucei*.

The *evansi* group show somewhat similar relations. The group includes parasites of horses, camels, and cattle to which they exhibit varying degrees of pathogenicity. The diseases they cause belong to two distinct groups. One, dourine of horses, is a venereal disease occurring in some parts of Asia, North Africa, and Southern Europe. The organism responsible for this disease, *T. equiperdum*, occurs chiefly in connective tissue exudates but not in the blood of the host. Transmission involves no insect vector but is effected at coitus. The other disease, surra, is widely distributed in both the old and new worlds, the trypanosomes being blood parasites of equines, bovines and camels, transmitted by tabanid flies. The trypanosomes belong to a number of species separated mainly on the grounds of serological differences between them. All but one of these trypanosomes are morphologically identical, and since the types of disease produced by them are similar, many authorities recognize only *T. evansi* as a valid species. *T. equiperdum* and *T. evansi*, although morphologically similar, have retained their independent status. As biological features are, however, the only criteria for differentiating one from the other, it is evident that *T. equiperdum* and *T. evansi* are merely biological races of one and the same species and the older name *T. evansi* should, therefore, be retained for both.

Leishmania cause two types of disease: one, in which the infection is generalized, is visceral leishmaniasis or kala-azar; the other is oriental sore, in which the infection is localized. These two diseases which are sharply differentiated clinically and pathologically, are widely distributed in warm countries throughout the world. *L. donovani* and *L. chagasi* cause the visceral human disease in the Old and New Worlds respectively. *L. tropica* and *L. brasiliensis* are responsible for the human cutaneous disease in the corresponding parts of the world. Some authors recognize still another species, *L. infantum*, for the Mediterranean type of kala-azar which affects almost exclusively young children and dogs. This species is differentiated from the Indian *L. donovani*, which does not occur in local dogs and mainly affects adult human beings. The parasites of canine leishmaniasis have also received distinct names. The classification is based on medical criteria, as all these parasites are morphologically identical and attempts to distinguish them by their behaviour in culture and by serological methods have failed. The canine parasites are identical with the ones producing human leishmaniasis. *L. donovani* and *L. tropica* are really two biological races of the same species and the earlier name *L. donovani* should be retained. One of these races produces a generalized visceral infection while the other causes localized cutaneous or mucosal lesions.

Instances of biological races occur in some of the blood-inhabiting Sporozoa of the order Haemosporidia, and especially in the malaria parasites and piroplasms. Members of the genus *Babesia* differ from each other in their restriction to particular intermediate hosts. The European strains of the canine piroplasm, *B. canis*, are transmitted by ticks of the genus *Dermacentor*, whereas an Asiatic strain was found to be transmissible only by ticks of the genus *Rhipicephalus*. The Asiatic strain is less pathogenic than the European one. Similar relations exist in *B. bigemina* of Texas fever in cattle.

Some strains of this species are transmitted by ticks of the genus *Boophilus*, others by those of *Rhipicephalus*.

There are few records of authentic biological races among intestinal protozoan parasites.

Host-parasite relationships differ and the variations, as shown by different races of protozoa, are fixed by the degree to which the parasites have become adapted to the physical and chemical environment of the host. Factors responsible for these variations include body temperature, quality of digestive juices, nutrition, and the parasiticidal action of the serum. There are reciprocal reactions between parasite and host which bring about mutual adaptation, and the serological reactions are of considerable interest as they shed light on the intimate make-up of the parasite. It is possible that biological races of some parasitic protozoa differ on the ground of the antigenic characteristics of the species as a whole. In blood parasites, antigenic constitutional differences, being qualitative chemical differences, mean that the distinctions between biological races are really differences in the chemical structure of the antigenic components of the organisms. These races are apparently stable and hereditarily fixed. The desirability of elevating these races to an independent systematic position, with a distinct name, is based not only on differential biological criteria but on the stability and constancy of their diagnostic features.—C. H. S.

VAN HOOF, L., HENRARD, C., & PEEL, E. (1944). Morphologie des trypanosomes polymorphes des mammifères dans les glandes salivaires de "G. palpalis". [**Morphology of the polymorphic mammalian trypanosomes in the salivary glands of** *Glossina palpalis*].—*Rec. Trav. Sci. med. Congo belge.* No. 2. pp. 204–219. **953**

It is claimed that the light infection of the salivary glands of *G. palpalis* with discrete trypanosomes, or the presence of vacuolated, globular forms with multiple nuclei and flagella, which DUKE had previously described in *T. rhodesiense* infections, are in fact characteristic of the *T. brucei-T. rhodesiense* group. It is thus possible to distinguish in *G. palpalis* between a *T. gambiense* infection and an infection with *T. brucei*, as in *T. gambiense* infection there is a dense invasion of the gland, and the trypanosome masses take the rosette form, consisting of organisms whose posterior ends are in the centre of the rosette, the flagella projecting from the circumference.—U. F. RICHARDSON.

MUDALIAR, S. V. (1944). **Some problems of bovine surra.**—*Indian vet. J.* **20.** No. 6. 244. **954**

A general account of the disease is given but no new material is added.—H. N. RAY (INDIA).

FAIN, A. (1944). La ponction sternale comme moyen de diagnostic à la période nerveuse de la maladie du sommeil à "T. gambiense". [**Sternal puncture for the diagnosis of the nervous type of** *Trypanosoma gambiense* **infection in human beings**].—*Rec. Trav. Sci. med. Congo belge.* No. 2. pp. 127–129. **955**

In an investigation of the value of sternal puncture in suspected cases of sleeping sickness in which trypanosomes could not be detected in the blood or lymph node juice, eleven positive results were obtained in 20 suspects.

It is pointed out that the trypanosomes were particularly numerous in the sternal marrow of children, and that in general the presence of trypanosomes in the marrow was associated with the nervous form of the disease.—U. F. RICHARDSON.

NAIMAN, D. N. (1944). **Effect of X-irradiation of rats upon their resistance to** *Trypanosoma lewisi*.—*J. Parasit.* **30.** 209–228. **956**

A study was made of the effect of X-ray treatment of a host on the course of an infection, and on the various aspects of its resistance, *T. lewisi* being chosen as the infecting organism. It is concluded that X-irradiation of rats increases the severity of *T. lewisi* infection, diminishes the ability of rats to produce ablastic antibody, and seems also to affect trypanolysin production. Vaccination with a formolized trypanosome suspension protected all of seven normal rats from an infecting dose of trypanosomes, but protected only two of nine previously irradiated rats. X-ray treatment did not significantly influence the effectiveness of a protective antiserum.

It is suggested that X-irradiation diminished resistance to *T. lewisi* by decreasing the amount of antibody produced, and that macrophage tissue, which X-rays are known to destroy, is of paramount importance in the resistance of rats to this infection. X-ray treatment of clinically recovered rats did not produce a recurrence of trypanosomiasis.—U. F. RICHARDSON.

NATTAN-LARRIER, L., RONCHÈSE, A. D., & STEEG, L. (1942). Les infections expérimentales du mérion par Leishmania donovani. [**Experimental infection of** *Meriones shawi* **(Muridae) with** *L. donovani*].—*Arch. Inst. Pasteur Tunis.* **31.** 212–221. **957**

Observations are recorded on the susceptibility of rodents of the species *Meriones shawi* to canine strains of leishmania. Every merion inoculated became infected, and it is concluded that the merion is a better experimental animal for leishmaniasis research than the Palestinian hamster (*Cricetus auratus*) which may resist infection, but that it is not as good as the Chinese hamster (*Cricetulus griseus*) which is more sensitive to leishmaniasis.—U. F. RICHARDSON.

WICKWARE, A. B. (1944). **Sarcosporidiosis in a black duck.**—*Canad. J. comp. Med.* **8.** 15–17. **958**

W. records a heavy infestation of *Sarcocystis rileyi*, Stiles 1893, in a wild black duck, *Anas rubripes*, shot in the vicinity of Ottawa, Canada.

—P. J. G. PLUMMER (CANADA).

PRUDIL, H. (1944). Meine Beobachtungen und Erfahrungen bei der Piroplasmose der Pferde in Russland. [**Observations on equine piroplasmosis in Russia**].—*Z. InfektKr. Haustiere.* **60.** 194–214. **959**

An outbreak of equine piroplasmosis, due to *Babesia caballi*, amongst German army horses in Russia is described. Ticks were first noticed on May 8th, the first sickness occurring on May 14th. The disease was most severe in animals grazed on swampy pasture, those grazing along the river valley having a medium infection, and those grazing on high land remaining comparatively free (22% affected as against 88% on swampy land). Only 37% of the riding horses contracted infection as against 55% and 72% in two groups of heavy horses. The mortality was largely dependent on the previous state of health of the animals. Of the animals in good condition only 5% died, of those in medium condition 13%, of those in poor condition 27%, and of cachectic animals 71%.

For treatment acaprin is recommended in the early stage of the disease, but when treatment was delayed and organic alterations had occurred, trypanblue or acriflavine given intravenously were found to give better results. It is recommended that acriflavine should be given in doses of 1 g. dissolved in 50 ml. of water. It has the advantage that it is also active against *B. equi*, but the disadvantage that it must be given strictly intravenously, or it may cause skin necrosis, and possibly thrombo-phlebitis.

The dose of trypanblue is given as 100 ml. of a 0·25% solution intravenously.—U. F. RICHARDSON.

UTSON, L. R. (1944). **Observations on bovine piroplasmosis in Antigua, B.W.I.**—*Canad. J. comp. Med.* **8.** 214–215. **960**

H. reports the first case of bovine piroplasmosis has seen on the island in ten years. It occurred in a tive-bred cow. Cases had been reported by former terinarians. The intracellular parasite conformed to e description of *Babesia bigemina* rather than *B. argentina*. It is suggested that this animal had lost a previously established immunity and had become reinfected when taken to an outside area for service.
—R. GWATKIN (CANADA).

See also absts. **1093** (porcine trypanosomiasis), **1139** (*T. simiae*), **1088** (*T. equiperdum*), **1118** (bovine trichomoniasis), **1094** (equine piroplasmosis), **1011** (bovine piroplasmosis), **996** (canine babesiasis and *Hepatozoon canis* in Belgian Congo).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

ERGENT, ED., PARROT, L., & HORRENBERGER, R. (1940). De la nécessité d'unifier la terminologie microbiologique. Faut-il dire contage ? microbe invisible ? virus filtrable ? virus ? ultravirus ? inframicrobe ? [**The necessity for unifying microbiological terminology. Choice between " contage ", " invisible microbe ", " filtrable virus ", " virus ", " ultravirus ", and " inframicrobe "**].—*Arch. Inst. Pasteur Algér.* **18.** 117–178. **961**

A similar paper by these authors has already been bstracted [see *V. B.* **11.** 411].—R. E. GLOVER.

OUSSIENG, E. (1944). Fra det hollandske Mund- og Klovesygeinstitut. [**Recent work at the Dutch foot and mouth disease institute**].—*Maanedsskr. Dyrlaeger.* **56.** 145–153. **962**

This is a résumé of the report for 1942 of the Staatsveeart senijkundige Instituut ", the Dutch foot nd mouth disease research establishment at Rotterdam.

In 1941, the institute had been enlarged in order ot only to carry out research but also to conduct campaigns for controlling epizootics of the disease. As the nstitute is not completely isolated by water, like those f Denmark and Germany, the problems of preventing he spread of infection are great; one problem is the reatment of manure which was formerly disinfected hemically and run away into the harbour. This nethod, being objectionable, was replaced by the contruction of insulated pits in which the manure became elf-sterilizing by heat generated during six weeks' torage.

Immune serum of high potency was prepared in 70 oxen immunized by natural virus and then hyperimmunized by culture virus. Immune serum was drawn weekly from the serum producers in amounts of ive litres for 12 weeks when they were completely bled out. Bivalent A and O serum was mostly produced.

Twenty-eight type-determination tests of field virus were carried out: 18 were A type, eight O type, and two were of mixed A and O type, this being the first time for 15 years for mixed virus to be found in Holland.

Much attention is paid to methods of symptomatic treatment of affected cattle. Soft bedding is as far as possible provided and the feet are kept clean and treated with iodine or other antiseptic. It has also been found that injection of calcium borogluconate into affected animals which are clinically sick and not taking nourishment, gives good results.

Teat lesions have often been found to be of extrinsic origin, and so attention is paid to udder cleanliness and to milkers' hands. A caustic soda ointment is used for the teats (5% NaOH ten, adeps lanae 30, and vaseline 60 parts).

An account is given of the work involved in preparing vaccine on a large scale. Difficulties in obtaining equipment led to great delay. It was also discovered rather late, that aluminium hydroxide was not made by any Dutch firm, so it was necessary to start its manufacture by special arrangement. Eventually, bivalent vaccine of the Riems type was made under considerable difficulty and was available after tests on cattle, for general issue in May, 1942. The first field trial was made around Sneck in Friesland, by special arrangement with farmers who agreed to cooperate just in time for a realistic test, as F. & M. disease was already in the province and only 5 km. from the trials area.

Adult cattle were vaccinated with 60 ml. of vaccine subcutaneously in the dewlap, young heifers received 40 ml. and calves 20 ml. Pigs were vaccinated behind the ear with 10 or 20 ml., depending on whether they were above or below 25 kg. body weight. Goats and sheep were treated with 10–20 ml., but were injected in the neck. Vaccination was applied to 1,972 animals in 38 herds and the disease occurred within 14 days in three herds, but did not attack all the vaccinated animals, presumably because immunity was developed in time to resist the natural infection.

This first test was considered satisfactory and steps were taken to prepare large quantities of the vaccine, and it was reported that by the end of 1943 vaccine production was at the rate of 150 litres weekly and was in course of increasing still more.

It is mentioned that the Dutch and Danish F. & M. disease establishments are working in scientific association.—J. E.

RÖHRER, H. (1944). Die intrazerebrale Uebertragung der Typen A, B and C des Maul- und Klauenseuchevirus auf die weisse Maus. [**Intracerebral infection of mice with types A, B, and C of foot and mouth disease virus**].—*Z. InfektKr. Haustiere.* **60.** 338–356. **963**

This is a continuation of the work of NAGEL [*V. B.* **9.** 238.] and of HOFMANN [*V. B.* **12.** 579.] by a repetition of their technique with the stock g. pig strains of the A and C types and with A, B, and C field strains of F. & M. disease virus.

(1) Type B field strain. The experiment was started with material from the 51st g. pig passage, and after 31 passages in the mouse, was divided into two series, (a) passaged every 24 hours, and (b) passaged every 48 hours. In (a) there were no symptoms in the mice until the 143rd passage. Encephalomyelitis was apparent by the 150th passage. Virulence increased until by the 180th passage it was necessary to passage every 18 hours as the mice were dead by 24 hours. By the 150th passage the dermatropic character, as shown by g. pig inoculation, was diminished, and this character had disappeared by the 187th passage. In series (b), symptoms appeared in mice by the 94th passage, but dermatropism was still demonstrable at the 198th passage. Virus from the control g. pigs of the 98th passage, after nine g. pig passages, did not cause illness in mice.

(2) Type A g. pig strain. This could not be passaged in the same way as the B strain. Passage was possible only if it was started by simultaneous inoculation with the virus of murine poliomyelitis. This virus was dispensed with at the 5th passage and owing to its longer incubation period it was eventually lost following the routine 24-hour passage of the F. & M. disease virus. Symptoms in mice were first seen at the 76th passage, and were definitely those of an encephalo-

myelitis by the 82nd passage. After 94 passages there was no alteration of the dermatropic character.

(3) Type A field strain. Passage in mice was started with material from the 27th g. pig passage; the use of murine poliomyelitis virus was again necessary. No symptoms occurred in mice after 46 passages. Dermatropism was unaltered.

(4) Type C g. pig strain. The use of murine poliomyelitis virus was necessary for seven passages. 104 mouse passages were made; no symptoms were observed and dermatropism was unaltered.

Typing tests were carried out periodically during these passages. The B type field strain before passage in mice had been typed as an atypical type B with a type A component. By mouse passage the type A component was gradually lost so that after 90 generations it had the characters of a pure B type. The g. pig type A strain remained a pure A type. The type A field strain was a pure type A to begin with, but by the 34th passage it had the characters of an atypical type B with a type A component. The g. pig type C strain was a pure type C, but by the 56th passage a type A component appeared; by the 75th passage the type C characters had disappeared and by the 93rd passage it was a pure type A.

Multiplication of the virus in the mouse brain was demonstrated by titration of brain suspensions in g. pigs. Before the mice started to die from encephalomyelitis the highest titre was usually obtained about 48 hours after inoculation and varied between 10^{-3} and 10^{-6}. By 5–6 days after inoculation no virus was demonstrable but a local immunity had developed, as reinoculation of the brain did not produce multiplication.

Histological examination of the brain was made every 10 passages. In the earlier passages there were signs only of inflammation or of degeneration, but once clinical symptoms appeared the picture was that of typical encephalomyelitis.—W. M. Henderson.

Viera, O., & Castelo, M. (1944). Protocolo de ensayos preliminares de immunización antiaftosa, con vacuna al cristal violeta. **[Preliminary trials with foot and mouth disease crystal violet vaccine].**—*Rev. Med. vet., B. Aires.* **26.** 114–118. **964**

A vaccine, prepared from virulent blood, taken from animals in the primary febrile stage of F. & M. disease, defibrinated, and treated with crystal violet, gave satisfactory results in the protection of cattle against the disease. The authors suggest that this vaccine provides a practical emergency measure in infected areas, since it may be prepared locally in an outbreak, there being therefore no need to determine the type of virus causing the outbreak.—I. W. B.

I. Torres, S. (1942). Vacina contra a febre aftosa (Nota prévia). **[A vaccine against foot and mouth disease. Preliminary note].**—*Bol. Minist. Agric., Rio de J.* **31.** No. 6. 29–30. **965**

II. Torres, S. (1942). Descoberto um novo tipo de vacina contra a aftosa. **[A new foot and mouth disease vaccine].**—*Ibid.* No. 7. 108–109. **966**

Both articles deal with the results obtained with a F. & M. disease vaccine, which is prepared by treating active virus with amino-acetic acid [glycine] and sodium carbonate, suspending it in aluminium hydroxide solution, concentrating, and formolizing it. One 5 ml. dose gives satisfactory immunity to pigs and young cattle.—I. W. Brocklehurst.

Stenström, T. (1941). Die Klinik der Maul- und Klauenseuche beim Menschen im Lichte der jüngsten Forschung. **[Syndrome of foot and mouth disease infection in human beings].**—*Acta med. scand.* **107.** 372–390. [In German]. **967**

In S.'s opinion, only eight authenticated cases of foot and mouth disease in man have been described. A detailed report is given of a further case in a milker of an affected herd. Three days after the disease had been seen in the cattle, the patient complained of headache, lassitude, shivering fits, sore throat, and a tingling sensation in both hands. The next day he developed vesicles on the hands from which a Vallée O type strain of F. & M. disease virus was recovered by g. pig inoculation. Test of the patient's serum after recovery showed the presence of O type antibodies.

The various features of these cases are discussed at some length in an attempt to give a reliable description of the syndrome in man. Most cases correspond to the description of an acute infection with an incubation period of 2–3 days, a preliminary phase characterized by headache, malaise, shivering fits, possibly pharangitis or tonsillitis, followed by the eruption of vesicles in the mouth or on the face, hands, or feet. The recovery of virus from the lesions by g. pig inoculation is conclusive evidence of infection with the virus of F. & M. disease. —W. M. Henderson.

Béguet, M., & Horrenberger, R. (1940). Enquête sur les incidents observés au cours de la vaccination antirabique par le vaccin phéniqué. **[The results of antirabies vaccination with phenol vaccines].**—*Arch. Inst. Pasteur Algér.* **18.** 179–202. **968**

A similar paper by these authors has already been abstracted [see *V. B.* **11.** 27].—R. E. Glover.

van Rooyen, C. E., & Illingworth, R. S. (1944). **A laboratory test for diagnosis of smallpox.**—*Brit. med. J.* Oct. 21st. 526–529. **969**

A rapid test for the differential diagnosis of variola and varicella by the microscopic examination of stained smears (Paschen's method) for the presence of elementary bodies.—W. M. Henderson.

Parish, H. J. (1944). **Smallpox vaccination by the multiple-pressure method.**—*Brit. med. J.* Dec. 16th. pp. 781–784. **970**

A small-scale experiment was undertaken to test the technique of smallpox vaccination by a multi-pressure method which is widely used in the U.S.A. Briefly, a small spot of vaccine lymph is placed on the skin and pressure is applied with the side of the point of a Hagedorn needle. The method produces a very superficial lesion over an area ⅛″ in diameter. Data were obtained from 214 persons. A table shows that in a group of 62 persons who had not previously been vaccinated, the majority reacted with a primary response which was moderate or severe: in 114 vaccinated once before, the majority of the reactions were of the "vaccinoid" type in which there is a shortened period of reaction, whilst in 38 previously vaccinated more than once, about 50% gave an immune or immediate reaction.

Secondary or immune reactions on revaccination should be distrusted until confirmed by a repeat test. The development of secondary lesions in a proportion of these cases is discussed.—R. E. Glover.

Herbut, P. A. (1944). **Diffuse glomerulonephritis following revaccination for smallpox.**—*Amer. J. Path.* **20.** 1011–1019. [Abst. from author's summary]. **971**

In the course of vaccination carried out following an outbreak of smallpox, one of the persons vaccinated developed diffuse glomerulonephritis. He had been vaccinated only once before, thirty years previously. The author was able to trace only one previous similar occurrence.

Pathologically, in addition to typical renal changes of diffuse glomerulonephritis, there were extensive submucosal haemorrhages in the calyces, pelves, ureters and

inary bladder. The lesions in the urinary tract were ery similar to some of those described in large epidemics variola which occurred at the turn of the century.

The cause was thought to be a sensitivity to the rotein of vaccine virus which was first received at the revious vaccination; sensitivity to calf serum could ot, however, be absolutely ruled out.

WARE, J. (1944). **Aerial convection from smallpox hospitals. [Correspondence].**—*Brit. med. J.* June 10th. 794. **972**

I. MACGREGOR, A. S. M. (1944). **Aerial convection from smallpox hospitals. [Correspondence].**—*Ibid.* **973**

II. MCSWEENEY, C. J. (1944). **Aerial convection from smallpox hospitals. [Correspondence].**—*Ibid.* **974**

I. Although the possibility of transmission by erial convection cannot be denied, leakage of infection hrough movements of the hospital staff is thought to e more probable.

II. Although aerial transmission must be considered as a possibility, it is more important to prevent pread of infection from the hospital by permitting eave to members of the staff only after careful personal disinfection.

III. Until the possibility of aerial transmission can be denied, it must receive due consideration.

—W. M. HENDERSON.

WELLS, M. W. (1944). **The seasonal patterns of measles and chicken pox.**—*Amer. J. Hyg.* **40.** 279–317. [Author's summary amended]. **975**

The seasonal patterns of spread of measles and chicken pox, while differing markedly from each other, are both entirely compatible with the theory of transmission by air-borne droplet nuclei. The seasonal patterns of scarlet fever, on the other hand, suggest that means of transmission less amenable to control by ventilation than are droplet nuclei play an important role in its spread.

HENLE, G., & HENLE, W. (1944). **Neurological signs in mice following intracerebral inoculation of influenza viruses.**—*Science.* **100.** 410–411. **976**

Meningo-encephalitis was produced in mice inoculated intracerebrally with human or porcine strains of influenza virus in the form of infective allantoic fluid of high titre. Death usually occurred in 24–72 hours. Symptoms could be prevented by neutralizing the virus with homologous immune serum.

Although active virus alone produced the phenomenon, no propagation of the virus in the brain could be detected and passage experiments were negative. The reaction is attributed to a toxic fraction in the inoculum.

—R. E. GLOVER.

SHARP, D. G., TAYLOR, A. R., MCLEAN, I. W., Jr., BEARD, D., & BEARD, J. W. (1944). **Density and size of influenza virus A (PR8 strain) in solution.**—*Science.* **100.** 151–153. **977**

The sedimentation rates of influenza virus particles under high-speed centrifugation in solutions of different density, *e.g.* sucrose, urea, etc., change rapidly owing to alterations in virus particle size due to high osmotic pressure. In the present work, this drawback was overcome by the use of bovine albumin which has a high molecular weight and a low osmotic pressure. Preliminary experiments having shown that there was no appreciable change in size in the system, a series of sedimentation measurements were made. When plotted in relation to density of the albumin solution, the observed points were practically linear. When PR8 virus was used in the form of infected allantoic fluid, it was calculated that $S_{20} = 742 \times 10^{-13 \cdot 9}$, giving a diameter for the particle of 115 mμ: this is slightly larger than the figure of 101 mμ obtained from electron micrographs.—R. E. GLOVER.

PEARSON, H. E. (1944). **Distribution of influenza virus type A in infected eggs and the survival of virus under certain conditions of storage.**—*J. Bact.* **48.** 369–378. **978**

The infectivity, immunizing powers, and haemagglutinin content of various parts of the developing egg (chorio-allantoic membrane, allantoic and amniotic fluids, embryo, and yolk sac) were tested at different periods after the introduction of virus. The maximum infective titre was reached in 24 hours, whereas haemagglutinin and immunizing potency continued to increase up to 48 hours. Haemagglutinin activity was stable for six months at 37°C., whereas the immunizing capacity was diminished under the same conditions. There was no advantage in freeze-drying over storing in the liquid state for the preservation of immunizing properties.

—R. E. GLOVER.

NIKOL'SKIĬ, V. V., & SLASTNIKOV, I. F. (1935). Materialy po izucheniyu etiologii meningitopodobnovo zabolevaniya loshadeĭ (MPZ). (Predvaritel'noe soobshchenie). **[Studies on the aetiology of equine encephalomyelitis (preliminary communication)].**—*Trud. Ural'sk vet.-zootekh. Inst.* No. 1. pp. 5–15. **979**

From different horses which had died from natural E.E., the authors isolated a filtrable virus which was repeatedly passaged through rabbits, cats, and horses by intracerebral, subdural, intra-peritoneal and intranasal inoculation with simultaneous administration *per os.* It is stated that ticks removed from naturally infected horses caused infection when allowed to feed on rabbits.—A. MOLDAWSKY.

HOWITT, B. F. (1943). **The complement-fixation test with human sera against viruses of St. Louis encephalitis and equine encephalomyelitis.**—*J. Immunol.* **47.** 293–302. **980**

A comparison was made between the complement-fixation test and neutralization test on both old and fresh sera from cases of human infection with the Western E.E. virus and St. Louis virus.

Antigens for the test were made from the brains of mice infected with the viruses used, and also a control antigen was made from normal mouse brain. Out of 137 sera, 73 or 54% showed complete correlation between the two methods, while in the other 46% there seemed to be a greater tendency for the c.-f. test to be positive for the St. Louis strain than for the Western E.E. virus, particularly if the neutralization tests were positive for both. The tests were not all made simultaneously. The complement-fixing antibodies for Western E.E. virus strain usually appeared later than those for the St. Louis virus; they did not appear as early in the serum as did the neutralizing substances, but remained in the blood slightly longer. The reverse was the case for the St. Louis strain. Thus the need is indicated for doing both tests in diagnosis. 12·4% of the sera, however, were positive to both Western E.E. virus and St. Louis virus by the c.-f. test and the neutralization test. Complement-fixing antibodies for the Western E.E. strain as well as neutralizing substances were found in a sample of serum at least two years after the onset of the disease, while those for the St. Louis strain were demonstrated after 10–14 months. Of 86 specimens examined with the normal mouse-brain antigen, four or 4·3% gave a positive reaction to the c.-f. test; these four were likewise positive with the other antigens used.

H. was not able to demonstrate cross-reactions between the antigens of the Eastern and Western strains of E.E. using the c.-f. test as reported by HAVENS, who used hyperimmune animal sera.

On prolonged storing, 53% of the sera were too anti-complementary for use. Some of the others were slightly weakened.—R. COOMBS.

MITCHELL, C. A., HUMPHREYS, F. A., & WALKER, R. V. L. (1944). **Equine infectious anaemia. An outbreak in the Ottawa Valley.**—*Canad. J. comp. Med.* **8.** 165–178 & 196–201. **981**

The disease was confined to certain areas of eastern Ontario and western Quebec, but even in these areas there were sharp lines of demarcation between infected and uninfected premises. No relation could be found between the type of soil or rainfall and the incidence of the disease. Three types were recognized and described, *viz*, acute, subacute, and chronic. The first two types usually appeared between June and September.

Outbreaks on three different premises are recorded and a table is included showing symptoms at different stages of the disease and the results of blood examinations, of 14 animals which died in one outbreak; P.M. findings in eight of these cases are also shown. In the acute and subacute types, the noteworthy blood changes were the reduction or total absence of eosinophiles, while in chronic types, there was decrease in both red blood cells and haemoglobin; occasionally, however, the haemoglobin was low without a corresponding reduction of the red blood cells.

Experimental transmission of the disease to horses, by means of blood from cases with the acute type was not conclusive, but it was definitely shown that filtered blood from subacute cases contained a virus. Evidence is also presented which suggests that there may be some difference between the viruses responsible for the disease in Eastern and Western Canada.

The fact that minute doses of infected serum are capable of reproducing the disease led to the assumption that an intermediate host played a part in its dissemination. A field experiment was therefore made in which two horses were secured for about six hours in a pond on infected premises, in such a manner that they could not partake of the water but were immersed up to the hocks. The animals died of the disease. Leeches inhabited the pond but would not attach themselves to healthy horses. A filtrate of crushed leeches or a sample of water when inoculated into healthy horses failed to cause disease. The authors do not emphasize this field experiment since the test animals might have been previously exposed.

Attempts at experimental immunization with formolized tissue suspension of infected spleen were unsuccessful, and, in fact, animals so dealt with died in a shorter time than the control. Ten photographs are included in the article.—L. M. HEATH (CANADA).

KRESS, F. (1944). Ueber virusbedingten Abortus bei Pferdestuten in den Donaugauen. **[Equine virus abortion in the Danube Province, Austria].**—*Z. InfektKr. Haustiere.* **60.** 180–193. **982**

During 1942–43, cases of abortion were recorded in mares in the Danube basin, in which bacteriological examination gave negative results. In investigations of five outbreaks, it was found that filtered foetal extracts, filtered nasal secretion of the dam, or even nasal secretion which had dried for nine days, when injected into g. pigs caused a catarrhal inflammation of the upper respiratory passages, and commonly death. Filtered extract of the heart, liver, spleen, and kidney of a dead g. pig inoculated into a pregnant mare failed to cause abortion, but both dam and foal developed a mucopurulent nasal discharge and conjunctivitis. Autopsy of aborted foals showed nasal discharge, petechial haemorrhages on the serous membranes and excess fluid in the pleural cavity, enlargement of the liver which exhibited focal necrosis, enlargement of the spleen, and congestion and oedema of the mucous membranes of the alimentary tract. Abortion occurred at about the eighth month of pregnancy. In view of the involvement of the respiratory tract, it is suggested that a strain of the equine influenza virus might have been involved. —U. F. RICHARDSON.

*DOBBERSTEIN, J. (1942). Histopathologie des Zentralnervensystems bei der Poliomyelitis des Schweines (ansteckende Schweinelähme, Teschener Krankheit). **[Histopathology of the central nervous system in porcine encephalomyelitis (Teschin disease)].**—*Z. InfektKr. Haustiere.* **59.** 54–80. [Abst. from abst. in *Jber. Vet.-Med.* **70.** 532]. **983**

In work which confirms the findings of other workers, D. maintains that porcine encephalomyelitis corresponds to poliomyelitis of man in its histological pathology as well as in its aetiology and clinical history. The name poliomyelitis suum is suggested as suitable. The question arises whether or not it is actually the same disease as poliomyelitis of man. No clear-cut cross-infection experiments between man and pig have been performed, nor have the mutual immunity relationships of the two diseases been worked out, and until this work has been done, no conclusion can be reached.—D. L. ROBARTS.

—. (1943). Deutsches Reich. Runderlass des Reichministers des Innern, betr. Feststellung der ansteckenden Schweinelähme. **[Germany: Circular concerning diagnosis of porcine infectious encephalomyelitis].**—*Reichsgesundheitsblatt.* **18.** 634–635. **984**

It has been established that clinical cases of porcine encephalomyelitis, even in the earliest stages, give a typical histological picture. Sections of the spinal cord, medulla oblongata, and cerebellum are essential for a conclusive histological examination; material taken from other parts or in a state of putrefaction may lead to errors. [Synonyms of the disease: Těšín disease (German: *Teschen*), first described by TREFNY in Těšín (Czechoslovakia) in 1929, infectious swine paralysis, and porcine enzootic meningo-encephalomyelitis].—J. Z.

LUCKEY, D. F. (1944). **The hog disease situation.**—*J. Amer. vet. med. Ass.* **104.** 5–9. **985**

A plea that vaccination against swine fever should be under the direct control of the veterinary surgeon. —J. A. J. VENN.

WATSON, E. A., HEATH, L. M., & PLUMMER, P. J. G. (1943). **Distemper studies in foxes. V. Diet and susceptibility to experimental distemper infection in foxes.**—*Canad. J. comp. Med.* **7.** 342–348. [For previous parts, see *V. B.* **14.** 234; see also following absts.] **986**

Three groups of 11 young foxes were put on three deficient diets, arbitrarily selected on a basis of hypothetical diets which might be employed by uninformed ranchers. A fourth group of 14 animals was put on a maintenance diet. Diet I consisted of muscle only, diet II of ox muscle and oat flakes, diet III of commercial basal ration, and diet IV of the basal ration 67%, ox muscle 20%, pigs' livers 2%, fresh carrots and cabbage 3% each, tripe 3% and water 2% to bind the ingredients. The original plan to challenge all animals comparatively with virus at intervals had to be discarded owing to the need for foxes for other work, and no strictly comparable challenge inoculations were made, but 26 animals were inoculated with viruses from various sources and at different periods. Four animals were also exposed by contact. Inoculations into foxes were controlled by ferret inoculations. Owing to the variable factors outlined in the paper, it was impossible to make a true comparison of the various diets as factors in susceptibility

o distemper, but, under the experimental conditions f exposure, there was no evidence to indicate that oung foxes on vitamin-deficient diets were more usceptible to the virus of distemper than foxes reared n a maintenance diet. Such differences as occurred vere attributed to the virulence of the different viruses nd the individual susceptibility of the animals.

—R. GWATKIN (CANADA).

WATSON, E. A., PLUMMER, P. J. G., & HEATH, L. M. (1944). **Distemper studies in foxes. VI. Attempted immunization of foxes with ferret distemper virus against canine distemper virus.**—*Canad. J. comp. Med.* **8.** 18–23. [See also preceding and following absts.] **987**

The authors attempted to immunize young foxes with distemper virus maintained serially in ferrets for 88 generations. Forty-eight foxes were used in six groups of eight animals each. Two types of vaccine were employed. One consisted of frozen spleen and the other of similar tissue after desiccation *in vacuo*. Pathogenicity of the vaccines for ferrets at the time when they were used in foxes indicated that only the frozen spleen tissue definitely contained active virus.

All treated foxes, regardless of the inocula received, and an equal number of untreated animals, serving as contact controls of the possible infectivity of the vaccines, remained healthy up to the 46th day, when the treated foxes were given alleged canine distemper virus contained in puppy spleen. This course was taken because virus from a fox source of dependable virulence was not available. A group of untreated foxes, half of which was challenged with the same agent, served as controls for the infectivity of the virus. The virus used, however, revealed pathogenic properties which differed from those of the virus usually recovered from foxes, in that it was pathogenic for g. pigs and mice, but not for ferrets.

As compared to the untreated infected controls, more deaths occurred among the animals treated with desiccated spleen and less among the group treated with the frozen spleen. An unexpected result was the low degree of infection manifested among the groups exposed by contact. Only one animal exposed in this manner died.

A repetition of the experiment on smaller groups of treated and untreated animals and on animals surviving contact exposure gave essentially the same results, when virus in spleen tissue recovered from one of the foxes which had died as a result of inoculation with the puppy spleen virus, was used.

Tissues from seven of the foxes which died following inoculation of puppy spleen did not reveal inclusion bodies.

HEATH, L. M. (1944). **Distemper studies in foxes. VII. The association of lymphocytic choriomeningitis and ferret distemper viruses in experimental fox distemper.**—*Canad. J. comp. Med.* **8.** 42–47. [See also preceding absts.] **988**

Spleen-tissue suspensions were obtained from foxes which were presumed to have died of canine distemper following inoculation of infected puppy spleen, but pathogenicity tests in ferrets, g. pigs, and mice indicated that the supernatant fluids contained the virus of lymphocytic choriomeningitis, either alone or in combination with ferret distemper virus. The distemper virus was only present in the foxes which had shown symptoms at least five days before death. One fox infected by contact exposure showed symptoms of distemper for 12 days before death, but only the virus of ferret distemper was demonstrated in the supernatant fluid of spleen suspension. The lymphocytic choriomeningitis and ferret distemper viruses, alone and combined, after purification by successive g. pig and ferret passages, respectively, failed to produce disease in healthy, non-immune foxes aged eight months. If age can be excluded as a factor in the results, it is suggested that the puppy spleen may have contained an unrecognized virus pathogenic for foxes and dogs but not for ferrets, g. pigs, and mice.—R. GWATKIN (CANADA).

WEIL, A. J., POPKEN, F., & BLACK, J. (1944). **Agglutination of antigens from distemper-infected dogs and ferrets by anticanine-distemper immune sera.**—*J. Immunol.* **48.** 355–359. **989**

It has been found that specifically agglutinable antigens may be prepared from the tissues of animals infected with St. Louis encephalitis virus and from the tissues of pigs infected with swine fever virus, by mixture with suspensions of *Chromobacterium prodigiosum*. [See ROBERTS & JONES—*V. B.* **12.** 416, and **13.** 320, and also WEIL—*V. B.* **13.** 244.]

The authors have applied this technique to canine distemper virus. Heat-killed *Chromobacterium prodigiosum* organisms take up some substance from the organs and body fluids of ferrets and dogs infected with distemper which causes them to be specifically agglutinated by the sera of distemper immune and hyperimmune dogs.

Untreated organisms and organisms mixed with uninfected tissues fail to agglutinate in the presence of distemper antiserum.—D. L. HUGHES.

FURTH, J., & DEGARA, P. F. (1944). **A granular body characteristic of certain non-bacterial pneumonias of mice.**—*Proc. Soc. exp. Biol., N.Y.* **56.** 107–110. **990**

Granular bodies up to 30μ in size were seen in the pneumonic areas of mouse lungs affected with the virus of mouse pneumonitis (Nigg). They were not produced by influenza B virus, mouse pneumonitis virus (Horsfall and Hahn), meningo-pneumonitis (Francis and Magill), or in numerous examples of spontaneous pneumonias. They were detected only in Giemsa-stained sections and contained numerous elementary bodies.

—R. E. GLOVER.

FOSTER, C., & EHRLICH, W. (1944). **Demonstration of the lesion produced by experimental poliomyelitis in the central nervous system of the mouse.**—*Arch. Path.* **37.** 264–271. **991**

The interest of this article in relation to comparative medicine, apart from the application of the findings to various infections in general when they involve the C.N.S., lies in the description of a special technique for the histological study of the minute organs of the C.N.S. of the mouse. The method is described in detail; it involves the use of a spiral "operating chamber", special precautions for the fixation of the preparation at body temperature, and embedding and storage methods.

BANG, F. B., & GLASER, R. W. (1943). **The persistence of poliomyelitis virus in flies.**—*Amer. J. Hyg.* **37.** 320–324. **992**

Theiler's mouse encephalomyelitis virus was recovered from adult *Musca domestica* up to 12 days and from *Muscina stabulans*, *Lucilia lepida*, *Sarcophaga haemorrhoidalis*, and *Calliphora erythrocephala* for 2–5 days after artificial infection. The Lansing mouse-adapted strain of human poliomyelitis virus survived for two days in *Musca domestica* only. Virus could not be isolated from the adults of infected larvae.—W. M. H.

BOSHELL-MANRIQUE, J., & OSORNO-MESA, E. (1944). **Observations on the epidemiology of jungle yellow fever in Santander and Boyacá, Colombia, September, 1941, to April, 1942.**—*Amer. J. Hyg.* **40.** 170–181. [Authors' summary amended]. **993**

The mechanism of the transmission of rural and jungle yellow fever was investigated in several small rural townships. Virus was demonstrated in *Haemagogus capricornii* and probably in *Aëdes leucocelaenus*. The virus was transmitted to the rhesus monkey by *H. capricornii*. *H. equinus* and *H. lucifer* were possibly vectors. Because of the topography of the region, infection of man appears to result from dispersion of the vector from the forests in the deepest parts of the valleys; this again emphasizes the purely jungle origin of the virus. In some regions, marsupials were found with serological reactions which tended to suggest recent infection.

NANDA, P. N., & ABDUSSALAM, M. (1943). **Observations on a contagious keratitis of Indian sheep.**—*Indian J. vet. Sci.* 13. 228–230. **994**

Clinical description is given of a contagious keratitis observed in North Indian sheep. In the conjunctival epithelium of early cases, *Rickettsia conjunctivae* Coles [see *V. B.* **2.** 294.] was always found. The disease could be reproduced in healthy eyes by subconjunctival injection of saline suspensions of infected scrapings or by instillation of infected lachrymal fluid, after an incubation period of 2–3 days. Cattle, goats, equines, and camels kept near affected sheep remained healthy.

MUDALIAR, S. V. (1944). **Canine rickettsiosis in S. India. Preliminary note.**—*Indian vet. J.* **20.** 163–164. **995**

Rickettsia canis was found chiefly in the blood monocytes of dogs showing persistent fever and anaemia. The tick, *Rhipicephalus sanguineus*, was found on the bodies of all infected dogs and is strongly suspected as the vector.—M. A. KHAN (INDIA).

GILLAIN, J. (1942). Présence de Rickettsia canis au Congo Belge. [*R. canis* **infection in the Belgian Congo**].—*Bull. agric. Congo belge.* **33.** 106–107. **996**

Infections of dogs with *Hepatozoon canis* and *Rickettsia canis* have been encountered in the Belgian Congo. The former occurred in association with *Babesia canis*, and persisted in the blood after the piroplasmal infection had been cured by acaprin or trypanblue. The two infected dogs remained in poor condition after recovery from tick fever, but made a slow recovery.

R. canis was encountered in lung and liver smears from a native dog which was slaughtered *in extremis*. It is suggested that *R. canis* does not cause serious disease, but when associated with *B. canis* it may lead to a relapse to the latter organism. Treatment for *B. canis* infection, involving the use of drugs which more or less block the reticulo-endothelial system, would aggravate the rickettsiasis. The only treatment for *R. canis* infection is said to be intravenous inoculation of 10 ml. of normal saline, to which 7 drops of formalin are added, the injection being repeated 48 hours later. —U. F. RICHARDSON.

GIRARD, G. (1943). Sensibilité des bacilles pesteux et pseudotuberculeux d'une part, des germes du groupe coli-dysentérique d'autre part, aux bactériophages homologues. [**Sensitivity of** *Pasteurella pestis* **and** *Past. pseudotuberculosis*, **and of the colon typhoid groups, to homologous bacteriophages**].—*Ann. Inst. Pasteur.* **69.** 52–54. **997**

In 1928, FLU isolated from canal water bacteriophages which were active against both *Pasteurella pestis* and the colon-dysentery group. G., using two of Flu's phages which had been preserved in ice for six years, confirmed this work. Phages A and C showed immediate action against *Past. pestis* and against the dysentery organism *DY6r* after four passages on *Past. pestis*.

Experiments with two other phages (considered specific for *Past. pestis*) whose activity had been maintained for ten years by regular passage on *Past. pestis* only, showed them to be efficient at a dilution of 10^{-8}. They were active also against *DY6r* without secondary culture. Another sample of phage of *Past. pestis* kept for ten years in a sealed tube had lost part of its activity against *Past. pestis*, but was active against *DY6r* after a passage on *Past. pestis*.

It is stated that the phages studied contained originally two distinct principles, the one active against *Past. pestis* and the other against the colon-dysentery group. FLU'S phages, conserved without transplanting for many years, compared in effect with G.'s samples, which had been maintained for ten years on *Past. pestis*.

G. concluded that there was a single phage active against *Past. pestis* and the colon-dysentery group, or two phages whose activities acted in a reciprocal manner on these organisms. It is suggested that this may indicate a relationship between *Past. pestis* and *Past. pseudotuberculosis* and the colon-dysentery group.

In a note on the paper, BLANC agrees with G. that *Past. pestis* ought not to be included in the pasteurella group, mainly because it lives and multiplies in the rat flea, *Xenopsylla cheopis*, whereas other pasteurella died out within 24 hours when in the body of the flea.—E. J.

See also absts. **998** (virus immunity), **1122** (F. & M. disease), **1120** (E.E. in India), **943** (swine fever), **931** (dog distemper), **1138** (virus research in Kenya, bluetongue, Nairobi sheep disease), **1143** (rickettsia of pigs), **918** (bacteriophage).

IMMUNITY

PANDIT, C. G. (1943). **Immunity phenomena in virus diseases.**—*Proc. 29th Indian Sci. Congr., 1942.* Part II. 253–268. **998**

There is general discussion concerning the nature of immunity to virus diseases.

Experimental work is quoted to support the view that the neutralizing antibody does not kill the virus and can be dissociated from it by dilution or by changing the route of infection. Also, if the virus has entered a cell the antibody is powerless to neutralize it. In some virus diseases, antibody is not demonstrable and tissue cells become resistant without its intervention (tissue immunity). One form of tissue immunity is attributable to the host-cells' being previously infected with a weaker strain of the same or of another virus ("interference phenomenon") and P. has observed it with vaccinia and rinderpest viruses. Interference to subsequent infection may also be provided by persistence of infection in "carriers", in the case of certain virus diseases.

Recently, vitamin C from natural sources has been found to exert some viricidal action in poliomyelitis, and the poliocidal substances in normal human and animal tissues also appear to be vitamin-like or hormonal in nature. This opens a new field for work on virus prophylaxis.

P. discusses methods of vaccination against certain virus diseases. Vaccines consisting of killed virus do not usually confer a lasting immunity; vaccines consisting of attenuated live virus are preferable. Formalin-killed vaccines appear to be more efficient than heat-killed ones in certain infections, but the possible range of formalin concentration is narrow. For antirabies

mmunization of dogs, the use of fresh fixed virus as n adjuvant to treatment with carbolized dead virus is he most effective method yet tried.
—M. ABDUSSALAM (INDIA).

LIU, H. C. (1941). **[Standard methods for the manufacture of veterinary vaccines and sera].** pp. 16 North West Veterinary Epidemic Prevention Bureau, Ministry of Agriculture and Forestry, China. [4to]. [In Chinese]. **999**

A detailed description of the standard methods for he manufacture of the following vaccines and sera in China :- (1) rinderpest tissue vaccine, (2) rinderpest antiserum, (3) anthrax saponin spore vaccine, (4) glanders antigen, (5) mallein, and (6) tuberculin.
—M. C. CHANG.

*LEHNERT, E. (1943). Vissa veterinärmedicinska skyddseras effekt bedömd efter de resultat som uppnåtts i praktiken. **[Veterinary antisera as judged by practical results].**—*Skand. VetTidskr.* **33.** 129. [Abst. from abst. in *Norsk VetTidsskr.* **55.** 221]. **1000**

This is an analysis of replies to a questionnaire sent to Swedish veterinary practitioners.

The antiserum for navel-ill is made with *Bacterium coli* A and B, *Streptococcus equi*, the streptococcus of Schütz, and *Bacterium equirulis*. 85% of 260 practitioners reported that it had a good prophylactic effect and 73% of 120 practitioners found it devoid of curative value.

62% of 161 veterinarians reported a good prophylactic effect and 33% of 132 users obtained good curative results with strangles antiserum. The majority of practitioners prefer sulphonamide therapy.

67% of 92 practitioners obtained good prophylactic results with "wound serum" which is active against streptococci and staphylococci, and 63% of 144 users found it of curative value.

Good prophylactic results with swine plague antiserum were reported by 82% of 95 practitioners and good curative results by 41% of 61 users.

"Pyogenes serum" was reported upon favourably by 58% of 38 veterinarians for preventive purposes and by 48% of 45 users for curative purposes [no details as to type of disease].—J. E.

BARRANDEGUY, E. A. (1944). Presencia de opsoninas en los animales con brucellosis. (Applicación del indice opsono-citofágico). **[Presence of opsonins in the blood of animals with brucellosis. (Use of opsonocytophagic test for diagnosis)].**—*Rev. Med. vet., B. Aires.* **26.** 161–175. **1001**

B. records that it is possible to use the phagocytic index test as a supplementary aid in the diagnosis of caprine, ovine, and bovine brucellosis.—I. W. B.

SCHWABACHER, H., ROSS, M., & CARRUTHERS, H. L. (1943). **Agglutination titres of normal sera.**—*Lancet.* **244.** 739–741. **1002**

Several hundred samples of human serum from healthy adults were examined for agglutinins against some of the common intestinal pathogens and *Proteus* O suspensions. The organisms studied were mainly of significance in human medicine. It was exceptional for any of the sera to agglutinate *Brucella abortus* in a dilution of 1 : 20 ; a very small number of persons had titres of 1 : 40 to 1 : 80 against this organism under the conditions of the test.—J. KEPPIE.

DOLD, H., & DECK, F. W. (1941). Ueber antibakterielle Hemmungsstoffe (Inhibine) im normalen frischen menschlichen Harn. **[Bacterial inhibiting agents (inhibins) in normal fresh human urine].**—*Z. Hyg. InfektKr.* **123.** 383–395. **1003**

Fresh, normal, sterile urine incorporated in agar inhibited the growth of *Salmonella typhi*, *S. paratyphi* B, *Bacterium shigae*, *Chromobact. prodigiosum*, *Bacillus subtilis*, *B. mycoides*, *B. anthracis*, *Pasteurella pestis*, *Mycobacterium smegmatis* and vibrios. It did not inhibit staphylococci, *Micrococcus tetragenus*, *Bact. coli* or *Brucella abortus*. The factor in urine spoken of by the author as "inhibin" is more heat-stable than analagous factors from other secretions. Urine also causes mutations of bacteria, particularly of organisms which produce pigments (*e.g. Staphylococcus aureus* and *Pseudomonas pyocyanea*).—E. BOYLAND.

BOIVIN, A., & DELAUNAY, A. (1943). Sur la production des anticorps à partir des antigènes somatiques isolés par voie chimique. **[Production of antibodies with chemically treated somatic antigens].**—*C. R. Soc. Biol. Paris.* **137.** 677–678. **1004**

A description of work done to assess the effect of adding aluminium hydroxide to somatic antigens used for the production of antibodies, that effect being a slow prolonged absorption. Weekly subcutaneous injections were made in rabbits of 0·1 mg. of *Salmonella typhi* O antigen, in some cases suspended in normal saline and in others with the addition of about 10 mg. of gelatinous aluminium hydroxide. Precipitin and agglutination tests were made of the blood serum. The average precipitin titre produced by the aluminium hydroxide + antigen mixture was 5–10 times that produced by the saline-antigen mixture, but it never exceeded 1 : 10,000, whereas it often reached 1 : 100,000 or 1 : 1,000,000 when given by the intraperitoneal and intravenous routes.

The delayed absorption is attributed to (1) slow elution of the mixture in a very weak phosphatic medium, and (2) hindrance to rapid absorption from the site of inoculation due to the inflammatory reaction set up by metallic hydroxide in a colloidal form, following the liberation of the antigen.—C. V. WATKINS.

MARKOVICH, A. V., & KHAUSTOVA, I. M. (1942) Fraktsionirovanie belkov elektrodializom. Soobshchenie IV. Fraktsionirovanie belkov antitoksicheskikh syvorotok. **[Fractionation of proteins by electrodialysis. IV. Fractionation of serum proteins of antitoxins].**—*Zh. Mikrobiol., Moscow.* No. 10. pp. 90–97. [Previous parts not traced]. **1005**

In electrodialysis fractionation studies, antitoxin and normal serum protein retained their properties best at pH values between 5·8 and 8·5. Outside these limits electrodialytic separation was not satisfactory.—A. M.

*BERGAMINI, L. (1942). Sul contenuto in fermenti mucinolitici (mesomucinasi) dei vari organi. **[Mucinolytic enzymes (mesomucinases) of various organs of the body].**—*Boll. Ist. sieroter. Milano.* **22.** 55–72. [Abst. from abst. in *Zbl. Bakt. I. (Ref.).* **144.** 335]. **1006**

Most organs in g. pigs, rabbits, and bulls have limited mucinolytic action. The relation between diffusing power and mucinolytic action is discussed. If mucinolytic action is demonstrable, diffusing power is also present, but diffusing power may be present without mucinolytic action.—O. CRUSE.

See also absts. **922** (anthrax vaccine), **923** (anthrax immunization), **937** (brucella vaccine), **944** (clostridium antitoxin), **956** (trypanosome immunity), **962, 964-966, 1122** (F. & M. disease vaccines), **970, 971** (smallpox vaccination), **980** (c.-f. test in E.E. and St. Louis encephalitis), **986** (distemper immunity in foxes), **987** (immunization of foxes against dog distemper), **989** (distemper antigens), **1138** (immunization against viruses), **1015** (diagnosis of trichinosis), **1016** (trichina toxin), **919** (inhibition of streptococcal fibrinolysin by antiprotease), **946** (hyaluronidase).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

PORTMAN, R. W. (1944). **Winter distribution of two ectoparasites of the cottontail rabbit in Missouri.**—*J. econ. Ent.* **37.** 541. **1007**

Rabbits collected for an ecological survey were subjected to an examination for ectoparasites, and the rabbits from five southern counties of Missouri were found to be carrying the tick *Haemaphysalis leporispalustris* whilst the larval stage of *Dermacentor variabilis* was also present on rabbits in one of these counties. In the more northern counties no ticks were present on rabbits collected during January and February. It appears that the southern part of Missouri represents the northern limit of all-the-year-round activity of ticks. Rabbits shot in the southern counties are, therefore, likely to be infected with tularaemia, but those shot in the northern counties during January and February may be used as food with relative safety. The dominant species of flea present on the rabbits was *Cediopsylla simplex*, other less common species being *Hoplopsyllus affinis* and *Odontopsyllus multispinosus*.—T. E. GIBSON.

CROMBIE, A. C. (1944). **On the measurement and modification of the olfactory response of blowflies.**—*J. exp. Biol.* **20.** 159–166. **1008**

The view was advanced by FROGGATT in Australia, that sheep blowflies developed their habit of ovipositing on live sheep because they had "learnt" the smell of damp or soiled wool from ovipositing on sheep carcasses, which were exceptionally common in periods of drought. The present paper describes olfactometric experiments on *Calliphora erythrocephala* and *Lucilia sericata* designed to see how far the responses of blowflies to odours can be modified by past experience. Details are given of the methods employed. Throughout the investigation menthol was the only substance tested. The flies were normally repelled by its smell, but where larvae of both species were reared on a diet containing 0·2% menthol the adults which emerged were not repelled by the odour. C. concludes that the "memory" of an experience in the larval stage survives metamorphosis and affects adult behaviour. C. also shows that where freshly emerging blowflies which have not been reared on a menthol diet are subjected to a menthol-containing atmosphere, they also develop a tolerance to the smell. In both cases, however, the tolerance is lost within a few days if the flies are allowed to live in a menthol-free environment. Flies which are allowed to live in a menthol-free atmosphere for a week following emergence cannot become adapted to that odour and are fully repelled by it. Where flies become tolerant of the odour, considerable variations exist in the degree of tolerance exhibited by individual flies. It is suggested that such differences in behaviour might lead to the formation of biological races.—J. B. CRAGG.

WIGGLESWORTH, V. B. (1943). **The fate of haemoglobin in *Rhodnius prolixus* (Hemiptera) and other blood-sucking arthropods.**—*Proc. roy. Soc.* Ser. B. **131.** 313–339. **1009**

The changes induced in the haemoglobin molecule inside the body of *R. prolixus* were studied by routine spectroscopic and chemical methods. From this work some interesting conclusions as to the functions of certain organs of the insect are drawn. Preliminary observations were also made on other blood-sucking arthropods. It is pointed out that the ease of recognition of the numerous derivatives of haemoglobin renders this type of work highly important in the study of many points of insect physiology.—D. G. GILMOUR.

COOLEY, R. A., & KOHLS, G. M. (1944). **The genus *Amblyomma* (Ixodidae) in the United States.**—*J. Parasit.* **30.** 77–111. **1010**

This is an extensive review of literature on the classification of members of the genus *Amblyomma*. The article serves a useful purpose in that the classification of ornate ticks may tend to be rather loose, due to the variations in colour characters which occur. Rocky Mountain spotted fever and tularaemia may possibly be transmitted to sheep and dogs by these ticks, and thus the ticks help in natural maintenance of these diseases, although they are probably not of much consequence as disease vectors to domestic animals.—G. B. S. H.

MARKOV, A. A., ABRAMOV, I. V., & DZASOKHOV, G. S. (1940). K biologii kleshcha Hyalomma volgense. **[The biology of *Hyalomma volgense*].**—*Trud. vsesoyuz. Inst. eksp. Vet.* **15.** 122–125. [French summary]. **1011**

H. volgense has a wide distribution in the U.S.S.R. It occurs in all the southern regions (Crimea, Caucasia, Ukraine, Lower Volga, Kazakhstan, and Central Asia), and apparently extends as far north as the Middle Volga. Cattle are the host of choice, and it feeds also on sheep and horses. Small wild animals, such as hedgehogs, hares, etc., are never attacked. The developmental cycle is confined to one host. Observations in Caucasia in the region of Krasnodar, showed that larvae appear on the hosts in October and November, and adults emerge between December and February. These remain on the host during the winter months in the unfed state, and during this period they may move from one animal to another, particularly in housed animals. Adults feed and leave the host during March and April. There is thus only one generation per year.

In view of the nature of the life cycle (one host and one generation per year), and the widely different seasonal occurrence of ticks (winter months) and piroplasmosis (hot season), it is apparent that the species plays a negligible part, if any, in the transmission of piroplasmosis.—J. ALLAN CAMPBELL.

LIU, H. C. (1941). **[Protection of cattle and horses against mange].** pp. 10. North West Veterinary Epidemic Prevention Bureau, Ministry of Agriculture and Forestry, China. [4to]. [In Chinese]. **1012**

A general account of the subject on conventional lines. No new material is dealt with.—M. C. CHANG.

BUXTORF, A. (1944). Über die Ziegenräude in der Schweiz. **[Mange in goats in Switzerland].**—*Schweiz. Arch. Tierheilk.* **86.** 106–112. **1013**

Tanned skins from goats affected with mange due to *Demodex folliculorum* var. *caprae* show scattered groups of holes up to 1 cm. in diameter. Usually, there is only a minute pore through the epidermis, which opens into a wider channel in the dermis. There may also be pustules scattered about on the inner surface of the skin. The disease markedly reduces the value of the skins. Although goat mange is a notifiable disease in Switzerland, a large number of cases are not reported, as is evident from the fact that only 50 cases were notified in a period of five years yet in one tannery over 100 infected hides were encountered. A summary is given of the recognized methods of treatment.—J. B. C.

See also absts. **953** (*Glossina*), **952** (vectors of protozoan diseases), **1139** (of *Trypanosoma simiae*), **992** (of poliomyelitis), **993** (of jungle yellow fever), **995** (of canine rickettsiasis in India), **1096** (mange), **1120**, **1121** (arthropod parasites in India), **1034** (ectoparasites of cottontail rabbits), **1095** (insecticides).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

CAMERON, T. W. M. (1943). **Studies on trichinosis. IV. Human incidence in Montreal.**—*Canad. J. Res.* Sect. D. **21.** 413–414. [For previous parts, see *V. B.* **11.** 698]. **1014**

From the examination of 539 unselected human diaphragms, the incidence of human trichinosis in the Montreal district was found to be 1·5%.

The light infestations in the Montreal district suggest that such infestations as do occur are the result of eating undercooked, rather than uncooked pork. In Eastern Canada the general incidence of swine trichinosis is 0·57%. In the U.S.A. it is 2·5% and the human incidence is 16·7%. The ratio of swine to human trichinosis in Canada is about 1 : 3 and in the U.S.A. 1 : 6·68.

The larger amount of swine trichinosis in the U.S.A. appears to be due to some pigs being fed uncooked garbage, since the incidence in those fed no garbage or cooked garbage is comparable with the Canadian figure.—P. J. G. PLUMMER (CANADA).

SPAETH, H. (1942). Die Diagnose der Trichinose mittels Hauttest und Komplementbindungsreaktion. **[Diagnosis of trichinosis by means of the skin test and the complement-fixation reaction].**—*Dtsch. med. Wschr.* **68.** 935–938. **1015**

S. prefers the skin test for trichinosis to the more complicated complement-fixation test, and considers it more reliable and more valuable in doubtful cases of the disease. He describes the technique of the test and the reaction in human beings. The antigen was used at a dilution of 1 : 500. The immediate reaction appeared within 10–30 min. taking the form of a red weal varying in size and frequently surrounded by an area of erythema. The delayed reaction was visible after 48 hours to three days and took the form of a red, raised centre often surrounded by a flat, wide weal. In reading the test, note must be taken of both the immediate and late reactions. In the early weeks both reactions are equally strong but after six weeks there may be a positive result to only one of them. [The testing of cases already diagnosed and of contacts from the same area showed the test to be capable of detecting certain symptomless cases of the disease as well as known positive cases. Healthy controls gave negative results.] —T. E. GIBSON.

*GAASE, A. (1943). Der Trichinellen-Antikörpernachweis im Liquor cerebrospinalis und der Nachweis von Trichinellentoxin in der Hirnsubstanz durch die Komplementbindungsreaktion. **[Demonstration of *Trichinella* antibodies in the cerebrospinal fluid and of *Trichinella* toxin in brain tissue].**—*Münch. med. Wschr.* p. 612. [Abst. from abst. in *Zbl. Bakt. I.* (*Ref.*). **144.** 426]. **1016**

In a report of a fatal case of human trichinosis it is recorded that 15 days after the first appearance of the disease the complement-fixation test was clearly positive, and that at 39 days there was a very definite reaction. About three months after infection, there were cerebral symptoms accompanied by fever, and the cerebrospinal fluid gave a positive c.-f. reaction. Trichinae were present in sections of muscle from the upper arm, thigh, and neck, and from the diaphragm, but none could be found in the cerebrum. Serum of a g. pig fed with pieces of cerebral tissue gave a positive c.-f. test after two days, although no trichinae could be seen in sections of the tissues made three weeks after feeding. It is suggested, therefore, that the development of a positive c.-f. reaction in the g. pig may be explained by the presence of a *Trichinella* toxin in the brain tissue which caused the development of a specific antibody in the g. pig. It is also suggested that the presence of this toxin would explain the cerebral symptoms seen in the human being.—T. E. GIBSON.

*LEHMENSICK, R. (1942). Über die Trichinose in der freien Wildbahn. (Weiterer Beitrag zur Epidemiologie der Trichinose). **[Trichinosis in wild animals].** —*Zbl. Bakt. I.* (*Orig.*). **149.** 338–344. [Abst. from abst. in *Jber. Vet.-Med.* **71.** 134]. **1017**

The mechanism by which domestic pigs become infected with trichinosis has not been fully worked out. L. believes that if transmission took place only between pigs and rats or other pigs, the disease would have been exterminated in Germany by meat-inspection methods. As the incidence of infection has remained the same since 1913 at 0·02–0·007%, he agrees with the conclusion of other authors that transmission of trichinosis takes place between wild carnivores in game reserves and domestic swine. In view of these facts, L. examined the records of trichinosis inspections of foxes carried out over a decade in the Rhineland province and in the General Gouvernement, Poland. From these investigations it was seen that, of 137 foxes in the Rhineland about 4% were infected with trichinosis, and of 66 in the General Gouvernement about 21% were infected. There is a clear indication that the examination of wild game for trichinosis in the Rhineland had considerably diminished the spread of the disease, although no investigation had been carried out into the incidence prevailing before the introduction of trichinosis inspection. The position in regard to fox trichinosis in the General Gouvernement was based on a single graphical and tabular statement, but it is suggested that repetition of the work would probably show similar results in this case also.—T. E. GIBSON.

WATT, J. Y. C. (1942). **Studies on rat immunity to nematode *Nippostrongylus muris*.**—*Cornell Univ. Abstr. Theses, 1941.* pp. 310–311. **1018**

The conclusions reached from a large volume of work are concisely stated in this lengthy abstract, and it is not possible to reproduce them. For abstracts of parts of this work, see *V. B.* **13.** 324 & 363.—D. G. G.

FURMAN, D. P. (1944). **Effects of environment upon the free-living stages of Ostertagia Circumcincta (Stadelmann) Trichostrongylidae: II. Field experiments.**—*Amer. J. vet. Res.* **5.** 147–153. [For part I, see *V. B.* **14.** 306]. **1019**

Alfalfa, ladino clover (*Trifolium repens* var. *latum*), and western rye grass were grown in plots two feet square on irrigated and non-irrigated soil, except that ladino clover was grown only on irrigated soil. Irrigation was not practised in the winter. The plots were infected with *O. circumcincta* by means of fresh sheep faeces, at the rate of approximately 50,000 eggs per square foot, and herbage and soil samples were taken subsequently and the numbers of larvae present calculated.

The results may be summarized as follows. During the summer months on irrigated pastures the eggs of *O. circumcincta* can develop into the larval stages and infective larvae can survive throughout the summer, but on non-irrigated land all free-living stages are rapidly killed. Irrigated pastures left idle during the summer may still carry the infective larvae and remain a source of infection for animals subsequently placed on them. Irrigated ladino clover favours the development and survival in the summer of the free-living stages of *O. circumcincta* more than does rye grass or alfalfa. Infective larvae survive longer in the summer on irrigated heavy soil than on light soil. During the autumn and winter months a greater percentage of eggs develop

into infective larvae than during the summer. Study of the migrating larvae on vegetation showed that following comparable infections the upper foliage of ladino clover carries more infective larvae than does the upper foliage of alfalfa, while alfalfa carries more than does rye grass. This is correlated with structure of the stems and leaves of the various plants, and it follows that sheep grazing ladino clover ingest more infective larvae than those grazing alfalfa or rye grass.

These field experiments are directly correlated with laboratory experiments already described [see *V. B.* **14.** 306].—T. E. GIBSON.

VAIDYANATHAN, S. N. (1943). **Skrjabinema ovis (Skrjabin, 1915) Wereschtschagin, 1925, an oxyurid parasite of the goat (*Capra hircus*) in India.**—*Indian J. vet. Sci.* **13.** 240. [Reprinted in *Indian vet. J.* **21.** 11–13 (1944)]. **1020**

S. ovis was found in the colon of nine of 70 goats examined in Madras, being commoner in young hosts and apparently non-pathogenic. Both sexes are described.—M. ABDUSSALAM (INDIA).

CRAM, E. B., & HICKS, D. O. (1944). **The effect of sludge digestion, drying and supplemental treatment on eggs of *Ascaris lumbricoides*.**—*Proc. helminth. Soc. Wash.* **11.** 1–9. **1021**

Eggs of *A. lumbricoides* originating from man and swine were introduced into sewage taken from a town main and the sewage seeded with ripe sludge, generally in the proportion of four parts of settled sewage to one part of ripe sludge. To ten parts of ripe sludge was added daily for 30–60 days one part of fresh settled sewage, giving a yield of 60–72 litres of sludge at the end of the observation period. The effects of digestion were observed for 2–6 months and then the sludge was poured for drying into wooden frames containing layers of gravel and sand of varying depths. The different lots of sludge were dried by exposure to constant temperatures of 86° and 68°F. and to the varying temperatures of the laboratory, a greenhouse, and a porch roof. Viability of the eggs was judged by the development of active embryos.

Eighteen lots of eggs were placed in digesting sludge and practically none developed. The eggs were very resistant to the digestive process and an average of 70% of all eggs exposed at different temperatures were viable during the first three months, after which a sharp drop in viability occurred. At the end of six months, however, about 10% of the eggs were still viable. Repetition of the sludge digestion appeared to be no more deleterious to *Ascaris* eggs than was continuous sludge digestion. It was found that under the aerobic conditions found in activated sludge, active embryos developed in *Ascaris* eggs which had been unsegmented when they were introduced into the sewage. Subsequent exposure to anaerobic sludge digestion showed that embryonated eggs survive anaerobic digestion for periods longer than those usually allowed for sludge digestion, although they seem to be less resistant than non-embryonated eggs.

Six lots of digested sludge were dried in the greenhouse and 13 cakes of sludge were dried outside. Variable viability was noted under these varying conditions, but it appears that *Ascaris* eggs cannot survive a reduction of moisture content to below 5%. Storage of pulverized, dried sludge containing 30·7% of moisture at 68°F. in a tightly covered glass dish did not influence the viability of *Ascaris* eggs during 44 days. Subsequently the powdered sludge was left in a loosely covered dish which allowed slow drying, and 71 days later the moisture content was 4·5% and no viable eggs could be recovered. Heating the sludge to 50°C. for 20 min. killed about 50% of the viable eggs present and heating to 103°C. killed all the *Ascaris* eggs present. Fumigation of eggs in sludge and sand with methyl bromide for 24 hours destroyed those eggs which had not started their development, but had little effect on partially or completely developed eggs.—T. E. GIBSON.

DE ABOIM-INGLEZ, A. L., & DA SILVA LEITÃO, J. L. (1942). Observações sôbre a biologia e distribuïção geográfica do "Stephanurus dentatus", Diesing 1839. **[Biology and geographic distribution of *S. dentatus*].**—*Bol. pec., Lisboa.* **10.** No. 1. 149–157. **1022**

The authors report the occurrence of the "kidney worm", *S. dentatus*, in pigs from the Azores. They discuss the life-cycle of the parasite, and give their observations on the distribution of the parasite in the host. They found no signs of the parasite's passage through the liver, although specimens were found on the capsule and distributed in the abdominal cavity between the liver and the perirenal area. Many of the nodules surrounding the ureters did not communicate perirenal fat where no cysts existed. In some cysts only fertilized eggs were found, in others one male and 1–3 female parasites were found, so that the view that pairs only are to be found is apparently not correct. The authors could find no support for the theory that parasites which penetrate the skin migrate to the perirenal tissues while those swallowed pass through the liver. Neither could they find any evidence that the method of husbandry had any influence on the portal of entry of the parasite, since wherever infective larvae are found it is as easy for them to be swallowed as to penetrate either intact or bruised skin.—M. W.

AYYAR, T. S. V. (1944). **Verminous ophthalmia in canines.**—*Indian Vet. J.* **20.** No. 5. 269. **1023**

Symptoms and treatment of the disease, due to *Thelazia callipaeda*, are described in a six-month-old pup.—M. A. KHAN (INDIA).

KATES, K. C. (1944). **Some observations on experimental infections of pigs with the thorn-headed worm, Macracanthorhynchus Hirudinaceus.**—*Amer. J. vet. Res.* **5.** 166–172. **1024**

Four pigs 2–3 months old were fed varying numbers of the acanthellae of *M. hirudinaceus* obtained from final-instar grubs of *Cotinus nitida*. Faeces were collected weekly from three of the pigs and daily from the fourth, and egg counts were carried out using a modified Stoll technique. After varying periods the pigs were slaughtered, the worms present counted, and the intestines examined for nodules.

It is not possible to determine the prepatent period exactly, but it was about 2–3 months. The patent period varied in different infections but the longest period observed was ten months. The average daily egg production per female was found to be 260,000 eggs; gravid females were found to contain as many as 10,000,000 eggs, but some specimens examined near the end of their productive period contained fewer than 100,000 eggs. The parasites were found in the small intestine 23–43 feet from the pylorus, although one male specimen was found attached to the ileum 53 feet from the pylorus. Characteristic nodules developed at the points of attachment of the parasites to the intestinal wall; these were up to the size of a hazel nut and were reddened or caseous in character. The spontaneous elimination of several parasites was observed. Resolution of the nodules took place after the parasites were eliminated.—T. E. GIBSON.

See also absts. **1120, 1121** (helminths in India), **1114** (preservation of faecal samples).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

FORTNER, J. (1944). Untersuchungen über die Rinderleukose. **[Investigation of leucosis in cattle].**—*Z. InfektKr. Haustiere.* **60.** 215–233. **1025**

Bovine leucosis is not a new disease in Germany, but was described as early as 1878, although it became more common after the war of 1914–18. Judging by condemnations of carcasses on account of "tumours", the condition is much more prevalent east of the Elbe than in western Germany; thus 1% of carcasses were condemned in Görlitz on account of "tumours" in 1938–1942, whilst in Frankfurt-on-Main the rate was only 0·007%.

Clinically, the disease is characterized by enlargement of the visible or palpatable lymph nodes, anaemic mucous membranes, and loss of appetite, combined with special respiratory, circulatory, or digestive disorders, dependent on the situation of the tumour formation. P.M., greyish-white tumour-like accumulations of white blood cells may occur in the lymph nodes, under the serous or mucous membranes, or in the heart or kidneys.

Attempting to devise a method of early diagnosis by blood examination, F. found that neither leucocytosis nor lymphocytosis was more marked in affected animals than it was in normal ones.

Attempts to transmit by subinoculation resulted in only one case developing out of 16 animals inoculated.

Experiments on mice indicated that murine leucosis was confined to certain mice strains, and though the condition could be transmitted by subinoculation, this was possible only in the susceptible strain, or in strains which had been cross-bred with it.

It is suggested that, like mouse leucosis, bovine leucosis is a hereditary condition, and that control measures should be directed to eradicating bovine strains susceptible to the condition.—U. F. RICHARDSON.

*DRIEUX, H., MARCENAC, N., BRIZARD, A., & GRATECOS, M. (1941). Leucose lymphoblastique aleucémique avec prédominance de lésions cutanées chez le chien. **[Aleucaemic lymphatic leucosis, with predominance of cutaneous lesions in the dog].**—*Bull. Acad. vét. Fr.* **14.** 155–166. [Abst. from abst. in *Jber. Vet.-Med.* **71.** 101]. **1026**

Clinical and pathological findings are described in a dog with aleucaemic lymphatic leucosis, showing a predominance of skin lesions and lymphoid proliferations in the cardiac and skeletal muscles and in the pancreas.—E. COTCHIN.

VENKATARAMAN, R. (1944). **Avian leucosis in Madras Province.**—*Indian vet. J.* **21.** 13–15. **1027**

A brief general description of the disease. It was noted in Madras for the first time in 1942, although in the adjoining Mysore States it was reported in 1937. V. now claims to have confirmed (microscopically) the disease in two Government breeding farms; imported breeds only are affected and V. believes that the disease has been imported. On one farm, infection spread slowly and the outbreak lasted for six months, deaths occurring at long intervals. No mortality figures are given.

[Indigenous breeds are also affected. In certain other parts of India a striking feature of the disease has been the preponderance of cases with big livers or tumours in organs, the nerve lesion form being rare.] —S. G. IYER (INDIA).

SCHREK, R. (1944). **Studies in vitro on the physiology of normal and of cancerous cells. II. The survival and the glycolysis of cells under aerobic and under anaerobic conditions.**—*Arch. Path.* **37.** 319–327. [For part I, see *V. B.* **14.** 15]. **1028**

Details are given of results from a preliminary survey of certain aspects of cellular physiology. These investigations were undertaken in order to determine whether the survival of cells *in vitro* is dependent upon the cell type, the species of animal used, and the presence or absence of air or dextrose or both. The methods are given in some detail, and the original article should be consulted for technique.

The major factor determining the length of survival was the cell type, and in most cases, oxygen or glucose were not essential for cell survival. An exception to this was the thymus cell of the rabbit, which required either oxygen or glucose in order to remain viable. It thus appears from these experiments that cells *in vitro* depend not on respiration or glycolysis, but on some other cellular reaction, possibly the metabolism of nucleo-proteins.

The pH of suspensions of viable cells was determined before and after incubation, and the capacity for aerobic and anaerobic glycolysis was thus estimated. Decrease in pH depended on the number and type of cells and the duration of incubation. Both peritoneal fluid and testicular cell suspensions developed as much acid under anaerobic as under aerobic conditions. Rabbit thymus cells produced less acid under aerobic conditions, whilst polymorphonuclear cells in peritoneal exudate produced acid in a medium free from glucose presumably by utilization of intracellular glycogen.

A comparison between the survival rates of human leucaemia cells and normal leucocytes *in vitro* showed no difference, but myeloid and lymphoid leucaemic cells differed markedly in their capacity for aerobic and anaerobic glycolysis. There was no significant difference in the survival rate of similar cells from various species of laboratory animals.—JOHN G. CAMPBELL.

DMOCHOWSKI, L. (1944). **Transmission of the mammary tumour inciting factor by splenic grafting.**—*Brit. J. exp. Path.* **25.** 119–120. [Author's summary copied *verbatim*]. **1029**

The results obtained in the experiments show that the mammary tumour inducing factor is present in the spleen of "S" low cancer strain mice foster nursed by high cancer strain R III females in a sufficient concentration to produce mammary cancer in susceptible mice.

LACASSAGNE, A., ROUYER, M., & THOMAS, J. A. (1942). Essais de transmission indirecte, par le lait, de l'influence maternelle sur le développement du carcinome mammaire. **[Attempt to transmit indirectly by the milk, the maternal influence in the development of mammary carcinoma].**—*C. R. Soc. Biol. Paris.* **136.** 650–651. **1030**

An extract of lactating mammary gland from high-cancer-strain mice was prepared by macerating the tissue in Tyrode's solution. After centrifugation, the supernatant fluid was injected into young mice of a low-cancer strain. They were given weekly injections of oestrone benzoate. Although the numbers used were small, the results indicated that the mammary extract contained the "milk influence". This factor did not appear to develop or even to survive in embryonic tissue culture, although it is admitted that the negative result may have been due to technical difficulties.—I. W. BROCKLEHURST.

MULLIGAN, R. M. (1944). **Feminization in male dogs. A syndrome associated with carcinoma of the**

testis and mimicked by the administration of estrogens.—*Amer. J. Path.* **20.** 865–875. **1031**

The clinical and pathological details of six cases of carcinoma of the testis reported in the literature are compared with changes evoked in male dogs by the administration of natural and synthetic oestrogens, and with results obtained in M.'s own experiments on the feeding of diethylstilboestrol to male dogs.

The symptom complex associated with adenocarcinoma of the testis of the dog agrees well with that produced by the administration of oestrogens, namely aspermatogenesis and some degree of atrophy of the germinal epithelium of the testis, metaplasia of the stratified squamous epithelium of the prostatic urethra, and of the epididymal and efferent ducts, and hypertrophy of the prostate. Other features of the syndrome are swelling of the penile sheath due to hyperplasia of the lining epithelium, partial atrophy of the hair follicles and sebaceous glands of the skin resulting in loss of hair, depression of libido, and attraction of other male dogs as to a bitch in oestrus.

M. concludes that these findings indicate that testicular carcinomas elaborate oestrogens or other substances alterable by metabolic process to compounds having a feminizing action.—JOHN G. CAMPBELL.

HADDOW, A., WATKINSON, J. M., PATERSON, E., & KOLLER, P. C. (1944). **Influence of synthetic oestrogens upon advanced malignant disease.**—*Brit. med. J.* Sept. 23rd. 393–398. **1032**

The effects are reported on 73 cases of advanced human cancer of the administration either orally or intramuscularly of the synthetic oestrogens triphenylchlorethylene, triphenylmethylethylene, and stilboestrol. Ten out of 22 cases of advanced breast cancer showed a significant though only temporary improvement following the administration of triphenylchlorethylene in doses of 6–10 g. per day. There was no evidence of any inhibitory action on the formation of metastases, and the degree of retardation was less than that usually brought about by X-irradiation. Of four cases of mammary cancer and three cases of Hodgkin's disease treated with triphenylmethylethylene (usually by intramuscular injection) only one (spheroidal-cell carcinoma of the breast) showed even a temporarily favourable response.

Stilboestrol administered over periods of several months brought about some degree of improvement in five out of 14 cases of breast carcinoma, one case in particular showing considerable improvement. Biopsies were performed on the cases showing a marked clinical response, and the chief histological findings were diminution of the mitosis rate, variability of staining and necrosis.

Administration of these oestrogens was frequently accompanied by nausea, uterine bleeding, oedema of the ankles, pigmentation of the mammary areola, and mastitis in the male subject. A gain in weight, improved appetite, and diminution of pain were occasionally reported.—JOHN G. CAMPBELL.

DISEASES, GENERAL

GOPALKRISHNAN, V. R. (1943). **Control of cattle diseases in Assam.**—*Indian Fmg.* **4.** 263–265. **1033**

Rinderpest is the chief cause of cattle mortality. Vaccination with goat-tissue vaccine is increasing in popularity, 450,000 cattle being vaccinated in 1941–42 as against 70,000 in 1935–36. Anthrax and haemorrhagic septicaemia are seasonal and sporadic, although the economic loss is appreciable; outbreaks are satisfactorily controlled by immune serum. It is stated that both diseases can be treated by the administration of camphor. Foot and mouth disease is widespread, the chief effects being debility, deformity, and reduced milk yield. Surra, piroplasmosis, and theileriasis are common diseases and, it is claimed, are satisfactorily treated with appropriate drugs [the treatment of theileriasis is not described]. Antrypol gave encouraging results both in the treatment and prophylaxis of surra. Climatic conditions favour the incidence of these diseases, and close grazing on permanent pastures and overstocking are contributory factors. Parasitic infestations of cattle are a major problem and a scheme of survey and control initiated by the Imperial Council of Agricultural Research is in progress.

At present, animal movement in and through areas affected with infectious diseases is quite unrestricted, as is the salvage and sale for export of hides, bones, etc. from diseased animals. The need for authority to impose certain restrictions commonly in force in other countries for the control of certain infectious diseases is discussed.

Reference is made to the role of wild animals as disease reservoirs.

The work of the veterinary investigation officer is referred to. Special investigations in progress include those on bovine contagious pleuro-pneumonia, Johne's disease, hump-sore in cattle, ear-sore in buffaloes, helminth and protozoan diseases, nutritional and deficiency diseases, and poultry diseases. Deficient pastures are considered the main cause of poverty of cattle and an investigation into this problem has been financed by the I.C.A.R.—J. F. SHIRLAW (INDIA).

BELL, J. F., & CHALGREN, W. S. (1943). **Some wildlife diseases in the eastern United States.**—*J. Wildl. Mgnt.* **7.** 270–278. **1034**

The results are summarized of a survey of the diseases of wild animals in the eastern U.S.A. Cottontail rabbits were found to be affected with abscesses from which pure cultures of staphylococci were consistently isolated, and observations carried out with these rabbits indicated that ticks (especially *Ixodes dentatus*) were involved in the causation of the abscesses, probably by furnishing portals of entry for staphylococci normally present on the skin. The similarity between this disease and tick pyaemia of sheep is noted.

Two species of tick were collected from cottontail rabbits, namely *Haemaphysalis leporis-palustris* and *Ixodes dentatus*. The infestation decreased during autumn and was negligible during winter (January-March), the average number per rabbit ranging from none to 141 at different seasons of the year.

On one rabbit which was carrying a few larvae and nymphs of *H. leporis-palustris* and nymphs of *I. dentatus* there were some 50 subcutaneous nodules containing ticks in various states of preservation. Of 17 nodules examined, 3 contained adult females, 11 contained nymphs, and 3 contained larvae of *I. dentatus*; the ticks in some cases were surrounded by a mass of fibrous tissue, whilst others were covered merely by a thin sheet of tissue and could be recognized as ticks with the naked eye.

Eleven species of fleas were present on the rabbits, but the commonest species was *Cediopsylla simplex*. Four rabbits were found to be infested with larvae of the bot fly *Cuterebra*.

A case of favus in a crow is described. Attempts to cultivate the causative fungus were unsuccessful. A dead skunk having bulbous enlargements of the frontal

nuses was found to be harbouring in them the nematode *krjabingylus chitwoodorum*, but the presence of other sions indicated that the sinus lesions were not the ause of death. *Sarcocystis* and *Taenia pisiformis* cysts ere found in rabbits, the latter being found in a much arger percentage of rabbits than the former.—T. E. G.

RAINEY, J. W. (1944). **Observations on equine colic.** —*Vet. J.* **100.** 176–182. **1035**

R. considers that the generally accepted treatments or colic are of little practical use. He doubts the value of drugs which increase the activity of the muscles of the alimentary tract at a time when their action is already disorganized and spasm is present, such as occurs in acute colic; similarly he doubts the value of small doses of such drugs as opium, ether or chloral hydrate for such cases.

He holds that the use of arecoline is objectionable on humanitarian grounds. He does not consider that, in acute spasmodic colic, gastric lavage has justified the hopes engendered when it was first introduced. He is, however, satisfied that it is of benefit in some cases of intestinal obstruction.

A short discussion on some aspects of stomach tube technique follows; he regards lavage as a most helpful adjunct to diagnosis.—H. E. BYWATER.

MACGREGOR, A. D. (1943). **Intestinal calculi in horses in India.**—*Indian Fmg.* **4.** 613–616. **1036**

Intestinal calculus in horses is ascribed to excessive magnesium phosphate intake. The habit of feeding bran in large quantities, which is rich in magnesium phosphate, is strongly deprecated and a ration containing oats 3 parts and bran 1 part is advocated. Horses kept for 12 years on such a feed never had colic or any other bowel disturbance.—S. N. RAY (INDIA).

PLUMMER, P. J. G. (1944). **Histopathology of enzootic bovine haematuria.**—*Canad. J. comp. Med.* **8.** 153–158. **1037**

A description of the gross and macroscopic pathology of lesions found in urinary bladders of affected cattle. The specimens originated from cattle in British Columbia where the disease is endemic on localized farms. Five photomicrographs are included of lesions in stages varying from the early type with haemorrhage and mild inflammation of the mucosal stroma to the malignant angiomatous type, and these form the basis of the paper. Two types of angioma are recognized. P. states that the normal bovine bladder is well supplied with lymph nodes, its normal appearance consequently differing from that in other animals.

—L. M. HEATH (CANADA).

—. (1940). Mais de 30 mil bezerros protegidos contra a pneumo-enterite. **[Vaccination of calves in Brazil against pneumo-enteritis].**—*Bol. Minist. Agric., Rio de J.* **29.** No. 10. 63. **1038**

The Ministry of Agriculture distributed more than 80,000 doses of vaccine [composition not stated] in the first half of 1940, for the treatment of pneumo-enteritis in calves. This disease, which gives rise to a mortality of 80% if unchecked, is aggravated by insufficient or deficient feeding, and by unhygienic conditions.

—I. W. BROCKLEHURST.

RAHIMUDDIN, M. (1944). **Chronic luxation of patella in cattle—an investigation.**—*Indian vet. J.* **21.** 55–58. **1039**

This condition is said to occur commonly in the Vizagapatam district. A brief account is given of its nature, the cause being unknown.—J. M. LAL (INDIA).

DOYLE, L. P., DONHAM, C. R., & HUTCHINGS, L. M. (1944). **Report on a type of rhinitis in swine.**—*J. Amer. vet. med. Ass.* **105.** 132–133. **1040**

An account of a dystrophic rhinitis occurring in pigs in Indiana and characterized by a distorted snout, violent sneezing, and occasional epistaxis. P.M. findings included bone atrophy and distortion and chronic inflammation of the nasal mucosa. No explanation is offered as to the aetiology of the condition.—J. A. J. V.

MOYNIHAN, I. W. (1943). **Avian osteopetrosis.**—*Canad. J. comp. Med.* **7.** 327–328. **1041**

Seven affected birds from one flock were examined. They appeared anaemic and showed little inclination to move. The featherless parts of the body were yellow. Anaemia was observed in every case, Hb readings ranging from 10–35 (Dare). Oligocythaemia was a constant feature. Leucaemic changes were not observed. Skeletal lesions varied greatly in extent; there was hypercalcification resulting in partial or complete obliteration of the marrow cavity, and all bones except the skull and vertebrae were affected. The surface was rough and irregular in many cases. Affected bones were much heavier than those from normal birds of the same age. Three birds showed gross changes of the parenchymatous organs, especially the liver and spleen which were enlarged and pale. In another bird, there was a grey tumorous mass involving the right lung and adjacent thoracic wall.—R. GWATKIN (CANADA).

MILLER, J. W. (1944). **Pathologic changes in sheep resulting from exposure to low barometric pressures.** —*Publ. Hlth Rep., Wash.* **59.** 618–620. **1042**

Twelve sheep were subjected at normal temperature to reduced pressures corresponding to 31,000, 36,000, 40,000, and 46,000 feet altitude in an atmosphere of added oxygen. The number of exposures varied from 1–16. All but one of the animals died after one or more exposures. The sole survivor had withstood thirteen 2-hour exposures at 36,000 and 40,000 feet. The main findings at autopsy were air emboli, epicardial and endocardial haemorrhages, effusion in the serous cavities, and contraction of the spleen.

Air embolism was greatest in the brain, rather less in the heart, and still less evident in various other tissues. Subendocardial haemorrhages were confined to the left ventricle: epicardial haemorrhages were mainly confined to the left branches of the coronary vessels. Serous effusions were present in all but two sheep and in all cases the fluid coagulated rapidly when the serous cavities were opened. In all the animals the spleen was small and contracted, the change being least marked in the animal sacrificed following the thirteenth exposure. This sheep showed air bubbles in the vessels of the heart and brain, about 75 ml. of fluid in each pleural cavity, and no cardiac haemorrhages.

—E. G. WHITE.

GRAEF, I., NEGRIN, J., & PAGE, I. H. (1944). **The development of hepatic cirrhosis in dogs after hypophysectomy. Its association with unanticipated coincidental hypothalamic injury.**—*Amer. J. Path.* **20.** 823–855. [Authors' conclusions copied *verbatim*]. **1043**

1. Fatty cirrhosis of the liver was encountered in 5 dogs that had been hypophysectomized $4\frac{1}{2}$ months to $3\frac{3}{4}$ years prior to post-mortem examination.

2. Six noncirrhotic animals examined 10 days to 5 years after hypophysectomy failed to exhibit fatty deposit or other hepatic change although moderate obesity was present in the animals surviving 8 months to 5 years.

3. Associated visceral and physiologic changes, such as adrenal cortical atrophy, thymic hyperplasia, coat changes, obesity, and diabetes insipidus, could not be related to the presence or absence of hepatic changes.

4. Study of the hypothalamus disclosed defects of

variable position and extent in the cirrhotic animals that were invariably greater than in the control animals after hypophysectomy.

5. Consideration of the literature indicates that the variable reports of fatty infiltration of the liver after hypophysectomy did not take into account the rôle of associated, often unsuspected, hypothalamic injury. Furthermore, analysis of the results of uncomplicated hypophysectomy showed that obesity and fatty infiltration of the liver do not follow. In contrast, hypothalamic injury is regarded as probably responsible for the disturbance in metabolism and perhaps changes in food habits leading to obesity and fatty infiltration of the liver depending on the diet of the animal.

6. A hypothetical explanation is offered to account for fatty infiltration and cirrhosis of the liver based upon the unanticipated hypothalamic injury coincidental to hypophysectomy. Changes in food habits may have led to excessive ingestion of a ration providing unbalanced proportions of the various constituents like those shown to lead to fatty cirrhosis.

CARRASCO-FORMIGUERA, R. (1944). **Alloxan diabetes in dogs.**—*J. Lab. clin. Med.* **29.** 510–517. [Author's summary copied *verbatim*]. **1044**

1. The production of pancreatic diabetes in dogs by alloxan is confirmed. 2. Alloxan can produce diabetes of varying degrees of severity. 3. The diabetes produced by alloxan, when of a very mild degree of severity, may be spontaneously curable. 4. The initial blood sugar changes brought about in the dog by diabetogenic doses of alloxan are slower in their appearance and smaller in magnitude than those in the rabbit; the initial hyperglycemia begins later; when detected, lasts longer, and the figures found in the present experiments have been, with one exception, much lower. The subsequent fall begins much later and, in the present experiments, has never been found to reach hypoglycemic levels. None of the three dogs that became diabetic required any antihypoglycemic treatment in order to be kept alive. 5. In all the three dogs that survived the injection of alloxan for more than one day, diabetes, with hyperglycemia and glycosuria, was established twenty-four hours after the injection. 6. Toxic reactions, other than those related to blood sugar changes, such as emesis, depression, paresis, and torpor, have been observed in some cases. Two dogs injected with 300 mg. per kilogram died in a very short period of time. In one of these, a condition that could be mistaken for hypoglycemia existed at a moment when actually there was hyperglycemia. 7. There is a wide range of variation as to the individual reactiveness of dogs both to the toxic and to the diabetogenic action of alloxan. 8. The hypothesis that the primary action of diabetogenic doses of alloxan on the islands of Langerhans might be one of overstimulation, resulting in temporal hypoglycemia from hypersecretion of insulin, is hard to conciliate with some of the presented facts.

ROSIN, A., & DOLJANSKI, L. (1944). **Erythrocytes in cytoplasm and nuclei of liver cells.**—*Brit. J. exp. Path.* **25.** 111–115. [Authors' summary copied *verbatim*]. **1045**

The presence of erythrocytes in the cytoplasm and nuclei of liver cells in rats treated with urethane or allylformate is reported and the significance of these findings is discussed.

ATKESON, F. W., IBSEN, H. L., & ELDRIDGE, F. (1944). **Inheritance of an epileptic type character in Brown Swiss cattle.**—*J. Hered.* **35.** 45–48. **1046**

A young bull which exhibited symptoms of epilepsy was mated to apparently normal cows and produced 37 offspring of which 23 were apparently normal, 13 were epileptic, and one died at birth. The following symptoms were noted :– lowering of head, tongue chewing, slight foaming at the mouth, and finally collapse in a coma. Attacks occurred at irregular intervals and were usually prompted by undue excitement. Affected animals returned to normal in 15–30 min. The attacks became less frequent with increasing age, and usually ceased when the animals were 1–2 years old, although some of the animals lacked control of their hind legs throughout life, often falling over for no apparent reason. The breeding analysis indicated that the epileptic character was inherited as an autosomal dominant.—N. J. SCORGIE.

GREGORY, P. W., MEAD, S. W., & REGAN, W. M. (1944). **Hereditary congenital lethal spasms in Jersey cattle.**—*J. Hered.* **35.** 195–200. **1047**

A new type of hereditary lethal spasm in Jersey cattle is described. Affected calves exhibit continual intermittent spasmodic movements of the head and neck, usually in a vertical plane. When the animals are forced to stand, spasms in both fore- and hind-legs hamper standing or walking. Noise and shocks neither initiate nor intensify the spasms. Apart from the spasms, such calves up to a few days of age appear to be normal and vigorous; they die, however, within a few weeks after birth. [No P.M. examination appears to have been carried out on affected calves.] The condition appeared in a number of herds in which closely related bulls were used, and became significant through inbreeding. Analysis of the data indicated that the defect is inherited as a recessive autosomal lethal.—N. J. SCORGIE.

CRAFT, W. A. (1943). **Swine breeding research at the Regional Swine Breeding Laboratory.**—*Misc. Publ. U.S. Dep. Agric.* No. 523. pp. 14. **1048**

The development of inbred lines of pedigree pigs is described. The value of breeding records is discussed. Haemophilia is considered and is concluded to be transmitted by an autosomal recessive gene.—J. A. J. VENN.

See also absts. **1107** (livestock diseases in Norway), **1129-1137** (in India), **1138** (in Kenya), **1139**, **1140** (in N. Rhodesia), **1141** (in Michigan), **1143** (in Algeria), **1102** (control in Montana), **1144** (handbook of contagious and infectious diseases), **1080** (bulbar paralysis in horses), **1097** (sterility in cows), **1069** (causes of sterility in bulls), **1139** (sweating sickness and summer diarrhoea of calves in N. Rhodesia).

NUTRITIONAL AND METABOLIC DISORDERS

QUIN, A. H. (1943). **Certain deficiency factors as they relate to diseases of cattle.**—*Indian vet. J.* **20.** 67–77. **1049**

An account of nutritional diseases described by various authors.—S. N. RAY (INDIA).

MICHAUD, L., & ELVEHJEM, C. A. (1944). **The nutritional requirements of the dog.**—*N. Amer. Vet.* **25.** 657–666. **1050**

A very useful and most readable summary, which might well be in the hands of all urban practitioners. There are no new concepts, but carefully chosen data are given on the requirements for calories, carbohydrate, fat, protein, vitamins A, B complex, C, D, E, and K, and for Ca, P, NaCl, K, Mg, Fe, Cu, Mn, Zn, and I. —A. N. WORDEN.

PETERSON, L. L. (1944). **The starting of chicks on grain and its effect in preventing "pasting up" at various controlled temperatures.**—*Poult. Sci.* **23.** 101–104. **1051**

P. describes three experiments on "pasting up",

condition in which soft faecal material accumulates round the vents of baby chicks, completely blocking the anal opening in severe cases. The experiments were to ascertain whether brooding temperature has any effect and whether finely cracked grain has any preventive value when fed as the only feed for the first 2–3 days (as reported by SEEGAR for maize in 1942). The condition seemed to reach a peak on the fourth day of all the experiments. Feeding chicks finely cracked grain as the only feed for the first two days had a protective value against "pasting up" when the first week brooder temperature was above or below 98°F. Extending the grain feed to three days instead of two gave no significant added protection.—J. D. BLAXLAND.

ASKEW, H. O. (1943). **Animal tests with cobalt-containing limestones at Sherry River, Nelson, New Zealand.**—*N.Z. J. Sci. Tech.* **25.** Sect. A. 154–161. **1052**

A Southland limestone containing 5 p.p.m. cobalt was used as a topdressing on severely Co-deficient soil at the rate of 2 tons per acre. This resulted in a slight improvement in the Co content of the pasture, with resultant benefit, for a period of six weeks, to the hoggets grazed thereon. After this period, the condition of sheep on this area fell below that of those grazing the plots treated with cobaltized superphosphate. In four experiments the results from the plots treated with Nelson limestone were no better than those from the control plots, treated with superphosphate, showing that the beneficial effects of the Southland limestone must be ascribed to the small amount of Co in the limestone and not to the release of Co from soil reserves or to any other favourable effect of limestone on the soil.

It was concluded that the most satisfactory way of overcoming Co deficiency diseases in stock on the granite soils of the Nelson district, when topdressing of pastures is contemplated, is to use cobaltized superphosphate.—M. B. BUDDLE (N. ZEALAND).

WATSON, J. (1943). **The effect of dressings of cobalt and limestone on the molybdenum content of some South Island pastures.**—*N.Z. J. Sci. Tech.* **25.** Sect. A. 162–164. **1053**

The effect was determined of both cobalt and limestone dressings on the molybdenum status of certain South Island pastures. The results were in general agreement with those reported from Scotland, in that where the initial molybdenum content of the pasture was low, cobalt dressings or the application of limestone to the pastures did not cause an appreciable increase in the molybdenum content.

—M. B. BUDDLE (N. ZEALAND).

I. BIRD, H. R. (1944). **Comparison of response of turkey poults and of chicks to different forms of vitamin D.**—*J. Nutrit.* **27.** 377–383. **1054**

II. BOUCHER, R. V. (1944). **Efficacy of vitamin D from different sources for turkeys.**—*Ibid.* 403–413. **1055**

I. Vitamin D assays on turkey poults showed that U.S.P. "reference cod liver oil no. 2" and another unfortified cod liver oil were similar in their relative efficacy for chicks and poults. With the two irradiated products used, a given number of A.O.A.C. [Association of Official Agricultural Chemists] chick units of vitamin D from irradiated 7-dehydrocholesterol and irradiated animal provitamin were respectively 2·29 and 1·83 times as effective for poults as the same number of A.O.A.C. chick units from "reference cod liver oil". The data indicate a difference in the vitamin D active compounds of fish oils and irradiated products in respect of their relative antirachitic potency for poults and chicks, and therefore the practice of evaluating vitamin D sources for turkeys on the basis of chick assays would appear to be unsound.

II. The effect on calcification of vitamin D from four different sources, *viz*, (1) U.S.P. "reference cod liver oil no. 2", (2) a sardine oil fortified with fish liver oils, (3) an irradiated animal sterol, and (4) irradiated 7-dehydrocholesterol, was tested out on turkey poults. (3) was prepared by irradiating with ultra-violet light the purified sterol mixture obtained from mussels. The potency of (2), (3), and (4) was assayed in three different laboratories by the A.O.A.C. method. All four supplements were fed on the basis of their A.O.A.C. chick unit potency. Distinct differences in efficacy were observed between the different supplements, the vitamin D of the irradiated products, on the basis of the chick units fed, being on the average about twice as potent in promoting calcification as the vitamin D of the "reference cod liver oil". The efficacy of the sardine oil, though slightly higher than that of the cod liver oil, was considerably less than that of the irradiated products. The data indicated that turkeys utilize certain forms of vitamin D more efficiently than chicks, and hence the vitamin D potency of a supplement expressed in A.O.A.C. chick units is not necessarily a true measure of its potency for turkeys.—E. M. C.

ALMQUIST, H. J. (1943). **The necessity of additional B-complex factors in the diet of the chick.**—*Proc. Soc. exp. Biol., N.Y.* **54.** 57–59. **1056**

When the diet of the parent hen was deficient in the *Lactobacillus casei* factor, the baby chick's reserve of this factor was low. This low reserve led to very poor growth and high mortality within the first two weeks, unless the synthetic chick diet was supplemented with a preparation of *L. casei*. When the hen's diet contained this factor (or factors), the chicks showed comparatively good survival and a certain amount of growth for two weeks, but at this stage, with the exhaustion of the reserve, growth ceased, and mortality became severe. The weight increases obtained in the experiments with *L. casei* preparations were considerably below normal, but were much improved when solubilized liver extract and yeast extract were given as well, indicating that an additional unknown factor (or factors) of the vitamin B complex is required by the chick.—E. M. CRUICKSHANK.

CUNHA, T. J., KIRKWOOD, S., PHILLIPS, P. H., & BOHSTEDT, G. (1943). **Effect of inositol upon rat alopecia.**—*Proc. Soc. exp. Biol., N.Y.* **54.** 236–238. **1057**

A ration of yellow corn, soybean meal, alfalfa meal, minerals, and halibut liver oil was found to contain insufficient folic acid, vitamin B_6, and inositol for normal growth and proper fur development. Supplementation with inositol prevented or cured the loss of hair which occurred on the basal ration. It also gave some growth response, as did a folic acid preparation. The best growth was obtained when all three factors were supplied.—E. M. CRUICKSHANK.

NIELSEN, E., & BLACK, A. (1944). **Role of inositol in alopecia of rats fed sulfasuxidine.**—*Proc. Soc. exp. Biol., N.Y.* **55.** 14–16. **1058**

A synthetic ration, containing purified casein and sucrose, to which sulphasuxidine had been added, produced marked symmetrical alopecia on the belly and hindquarters of albino and piebald rats. Administration of inositol prevented the alopecia and produced a condition of the fur comparable to that of animals kept on a complete stock diet.—E. M. CRUICKSHANK.

BRIGGS, G. M., LUCKEY, T. D., ELVEHJEM, C. A., & HART, E. B. (1944). **Further studies on vitamins**

B_{10} and B_{11} and their relation to "folic acid" activity.—*J. biol. Chem.* **153.** 423–434. **1059**

The chemical properties of B_{10} and B_{11} are very similar, and separation of the two substances is difficult. Both are insoluble in the common organic solvents, but are soluble in water and glacial acetic acid. A superfiltrol eluate of solubilized liver contains at least four substances with biological activity, *viz*, vitamin B_{10} (necessary for feather formation in chicks), vitamin B_{11} (necessary for growth), and two factors necessary for *Streptococcus lactis R* and *Lactobacillus casei*. Folic acid activity has been separated, at least in part, from vitamins B_{10} and B_{11} and the anti-anaemic factor (B_c), and does not appear to be necessary for the chick, unless in small amounts.—E. M. CRUICKSHANK.

BRIGGS, G. M., Jr., LUCKEY, T. D., ELVEHJEM, C. A., & HART, E. B. (1944). **Effect of ascorbic acid on chick growth when added to purified rations.**—*Proc. Soc. exp. Biol., N.Y.* **55.** 130–134. **1060**

Chicks fed highly purified rations showed a small but definite growth response when a supplement of ascorbic acid was supplied. The authors discuss the possible mechanisms involved in this response, and their relationship to the effects obtained with *p*-aminobenzoic acid.—E. M. CRUICKSHANK.

I. RUSSELL, W. O., READ, J. A., & ROUSE, E. T. (1944). **Morphologic and histochemical study of the effect of scurvy on tuberculosis in guinea pigs and of the origin, amount and distribution of alkaline phosphatase in the foci of caseous necrosis.**—*Arch. Path.* **38.** 31–39. **1061**

II. RUSSELL, W. O., ROUSE, E. T., & READ, J. A. (1944). **A histochemical study of the effect of scurvy on the activity of alkaline phosphatase in the kidneys of guinea pigs.**—*Ibid.* 40–45. **1062**

I. A virulent strain of human tubercle bacilli was injected into the gluteal muscles of g. pigs having a scorbutic diet, or an adequate diet, or having vitamin C but being partially starved. All the animals were killed 43 days after the injection, those on the scorbutic diet having been given occasional doses of ascorbic acid to enable them to survive. All showed essentially the same lesion in the muscle at the site of injection, but in the scorbutic animals the spread of TB. to the viscera and the extent of caseation of tuberculous lesions in the liver and other organs were markedly greater than in normal or starved g. pigs.

Alkaline phosphatase was studied in the tuberculous lesions by the histochemical methods of GOMORI [(1939). *Proc. Soc. Exp. Biol., N.Y.* **42.** 23.] and TAKAMATSU [(1939). *Trans. Soc. path. japon.* **29.** 492]. The phosphatase did not seem to appear in areas of caseation simultaneously with the development of necrosis. In large foci of necrosis, alkaline phosphatase disappeared from the central mass of caseous material and appeared in a zone on the periphery of the advancing necrosis. This distribution was different only when large numbers of polymorphonuclear leucocytes containing alkaline phosphatase appeared in caseous lesions surrounded by acute inflammation. There was no demonstrable difference in the distribution of the phosphatase in tuberculous lesions in scorbutic, starved, or normal g. pigs. The activity of alkaline phosphatase in caseous lesions as a factor in tissue resistance did not appear to be influenced by vitamin C.

II. Histochemical study showed that there was less alkaline phosphatase activity in the kidneys of scorbutic than in those of normal g. pigs. The decreased phosphatase activity of the renal tubules could not be correlated with any of their known physiological functions. No significant differences were detected in the phosphatase activity of the liver, spleen, lungs, adrenal glands, and intestinal mucosa of normal and scorbutic animals.—A. M. COPPING.

MCINTOSH, R. A. (1944). **Acetonemia—ketosis.**—*Canad. J. comp. Med.* **8.** 227–232. **1063**

Ketosis in cows is compared to pregnancy toxaemia in sheep. A heavy protein diet coupled with inherent capacity for milk production leads to a heavy milk production which demands excessive utilization of carbohydrates. Fat may then be oxidized or there may be factors in the feed which induce liver changes and ketosis. Not enough consideration has been given to the changes which occur in the liver. In one case, a marked acetonaemia persisted for over 30 days. Vitamin A did not arrest the evidence of acetonaemia. Calcium gluconate, choline, and inositol were also used and prevented the more serious aspects of the disease from developing. The inositol and choline chloride, the former in 20 g. and the latter in 5–20 g. doses, may have arrested the fatty changes that occur in the liver. If it can be shown that vitamin A deficiency is the cause of the changes which occur in the livers of cows affected with ketosis and of sheep dying of pregnancy disease, it may be justifiable to assume that this deficiency is the cause of the disease.—R. GWATKIN (CANADA).

KAPELLER-ADLER, R. (1944). **Investigations on the activity of the histaminase in normal and toxaemic pregnancy.**—*Biochem. J.* **38.** 270–274. **1064**

Previous experimental data in the metabolism of pregnant women, had suggested that histamine might be formed from the histidine present in large amounts in the serum throughout gestation, by the activity of histidine decarboxylase. In normal pregnancy, most of the histamine formed is presumably destroyed by histaminase. In severe cases of pre-eclamptic toxaemia and in eclampsia, a condition may arise where the activity of the histidine decarboxylase may be increased, whereas that of the histaminase may be completely inhibited. In such cases much of the histidine would be converted into histamine which, not being destroyed by histaminase, would cause considerable damage, especially to the liver and kidneys.

In the present paper, it is shown that tests for histaminase in the serum of non-pregnant women are always negative, but that in normal pregnancy such tests are positive without exception. The activity of the histaminase was diminished in mild cases of pre-eclamptic toxaemia, and only a trace of activity or a negative enzyme reaction was obtained in cases of hyperemesis gravidarum, in severe cases of pre-eclamptic toxaemia, and in eclampsia. The results obtained in investigations on 45 placentas suggested a possible correlation of the amount of histaminase in the placenta with the character of the labour, the activity of the histaminase in the placenta having been found to be inversely proportional to the uterine efficiency. The author concludes that, although the experiments recorded are so far incomplete, the data obtained suggest that histaminase, which is very effective in the placenta during pregnancy, may become inhibited at the end of pregnancy by the action of some compounds, possibly the sex hormones, which are known to play an important role at the onset of labour. In this connexion, the author has previously shown that gonadotropic hormones inhibit the activity of histidase.

—N. J. SCORGIE.

See also absts. **1036** (effect of diet on intestinal calculus in horses), **986** (on distemper immunity in foxes), **1120, 1121** (nutritional value of fodder and milk in India), **945, 951** (growth factors), **1097** (ascorbic acid), **1141** (vitamin D and "milk fever").

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

ADIQ, M. N. (1943). **Some observations on the internal body temperature in goats.**—*Indian. J. vet. Sci.* **13.** 247–248. **1065**

The average morning temperature in a healthy Indian goat ranges between 100°F. and 102°F. and the evening temperature between 101°F. and 103°F. For recording the morning and evening internal temperatures, 366 and 230 goats respectively were used. Moderate exercise raised the temperature by about 0·4°F., while excitement raised it by 1·2°F. Temperatures registered *per rectum* and *per vulvam* did not differ. Atmospheric temperature had a marked influence on body temperature, which was higher during the summer. —S. SEN (INDIA).

GRÜTTNER, F. (1943). Ueber das Verhältnis des Gewichtes der Haut zum Lebendgewicht bei Kälbern der Niederungsrassen. **[Relationship between total weight and weight of the skin of Lowland calves].**—*Z. Fleisch- u. Milchhyg.* **53.** 151–153. **1066**

In cases when the skin of the head and feet of calves was trimmed off before weighing, the average ratio of skin to body weight was found to be 1 : 7. In animals over 65 kg. when the skin of head and feet had not been separated from the remainder, the average comparison was 1 : 8·5, and with calves of lighter weight, 1 : 9 or 9·5.—C. W. OTTAWAY.

PRICE, D. (1944). **The reactivity of the prostate gland of the female rat in relation to age.**—*Amer. J. Anat.* **75.** 207–231. [Author's conclusions copied *verbatim*]. **1067**

The prostate gland of the female rat was a sensitive indicator for the presence of ovarian androgen in females injected with equine gonadotropin. It was highly responsive to treatment with testosterone propionate and in its percentage weight increase above the normal appeared to exceed the reactivity of the male gland under similar experimental conditions. In both female and male prostates an essentially maximal percentage increase in weight was reached by 14 days of age. Estradiol benzoate administration inhibited the female prostate as it did the male gland, and presumably in the same way as a result of inhibition of the gonadotropic function of the pituitary with a consequent reduction in the amount of gonadal-secreted hormone.

GUNSALUS, I. C., CAMPBELL, J. J. R., BECK, G. H., & SALISBURY, G. W. (1944). **The bacteriology of bull semen. II. The effect on bacteria upon rapid tests for semen quality.**—*J. Dairy Sci.* **27.** 357–364. [See also *V. B.* **12.** 370]. **1068**

The results of the investigations here described show that if bull semen is collected and handled with proper hygienic precautions the number of bacteria in a freshly collected sample or in semen in freshly prepared egg-yolk-citrate diluent is not sufficient to interfere with the methylene-blue reduction test for semen quality [see also *V. B.* **14.** 76]. In addition, at the temperature recommended for conducting the test, *viz*, 46·5°C., up to 50% of the bacteria present may be killed, especially in the presence of the methylene blue. Of the bacteria most likely to interfere with the test, the *coli-aerogenes* organisms can be excluded by proper care in the handling of the semen at all stages. *Pseudomonas* organisms are sometimes found in large numbers and as the predominating type in the semen of some bulls. Ordinary hygienic methods do not influence the number of these bacteria, for their source appears to be deep in the reproductive tract. Bulls harbouring *Pseudomonas aeruginosa* in the genital system are likely to have poor breeding records [see also *V. B.* **12.** 370].

The methylene-blue reduction test is not recommended as a criterion of the quality of semen stored for more than two days. Certain unknown factors, in addition to the apparently minor effects of the number and kinds of bacteria, influence the test with stored samples and make the results unreliable. For estimation of the quality of stored samples, observation of the duration of motility at 46·5°C. is recommended [see also *V. B.* **14.** 76].—N. J. SCORGIE.

DEAKIN, A. (1943). **Field fertility tests and causes of sterility of bulls.** pp. 26. Ottawa: Dominion of Canada, Department of Agriculture, Experimental Farms Service. [4to] [Mimeographed]. **1069**

Field fertility tests are concerned with volume, colour as an indicator of density, motility, and proportion of abnormal sperms. The technique of collection and examination of stained and unstained material is given. The minimum standard is 50% actively motile sperms after 48 hours at 40°C., or 10% after four days. Some bulls yield more toxic accessory gland secretions than others and this may adversely affect the sperms under storage conditions.

Two cases of aspermia are described; a mild infection sufficient to inhibit spermatogenesis but not to cause apparent pathological conditions was believed to be the cause. Two cases of chronic orchitis in mature bulls are discussed; the semen was brownish in colour and the motile sperms all died within a few hours. There was a large proportion of broken sperms and considerable cell debris but no leucocytes. The testes were flaccid in the more advanced stages. Several cases of sterility were diagnosed as seminal vesicle infections by the examination of semen samples and experimental data were collected in one case. The detection of milder cases requires several semen tests performed over a period of weeks. The semen in such cases may be of normal colour and consistency, but flaky; sperms may be of normal morphology but may die soon after collection. Leucocytes may be present. Urethral conditions, apart from the obviously pathological ones, are considered to be of importance from the viewpoint of contamination of semen.

The relation of nutrition to sterility, high and low body condition, and the problems of winter breeding are discussed. Other questions dealt with are breeding capacity, handling and shipping of bulls, and exercise and cleanliness.—R. GWATKIN (CANADA).

LASLEY, J. F., & BOGART, R. (1943). **Some factors influencing reproductive efficiency of range cattle under artificial and natural breeding conditions.**—*Res. Bull. Mo. agric. Exp. Sta.* No. 376. pp. 56. **1070**

A study was made of the semen characteristics of range (Hereford) bulls in Arizona. In general, the results are in agreement with the findings of other workers previously reported for bulls of the dairy breeds. Some evidence was obtained that range bulls may be more capable of withstanding frequent service than dairy bulls. Contrary to the reports of other workers in the U.S.A., it was found that the fertility and rate of production of spermatozoa were highest in the hottest part of the breeding season (June and July). The difference may be explained by the very low humidity in Arizona, which thus enables the scrotum to function at its maximum capacity as a temperature regulator, even at the highest atmospheric temperatures.

The duration of oestrus in range cows in Arizona was found to be short (5–8 hours), but the length of the oestrous cycle was normal (19·62 ± 0·12 days). The interval from calving to the first oestrus averaged 80·23 ± 1·30 days, and was somewhat longer than has

been reported for cows elsewhere in the U.S.A. The fertility of the cows was influenced by age, being lowest in two-year-old heifers, highest in cows 5–7 years of age and declining again in cows 9–10 years old. Dry cows were harder to settle than lactating cows. During a three-year period, there was a tendency for the cows to repeat their breeding performance of the first year, *i.e.* poor breeders continued to be poor breeders and good breeders continued to be good.

The average range bull sires 15–20 calves per season by natural service. On the ranch where the present investigation was made, a herd of approximately 20,000 cows and heifers is maintained ; it is necessary to turn 300–400 bulls on the range each year to ensure a satisfactory calf-crop. Over a period of three years, 78·8% of the cows inseminated produced calves, requiring 1·63 inseminations per calf. Up to 500 cows were artificially inseminated with the semen from a single bull during a five-month breeding season, and this figure could have been increased by better methods of storing semen. It is concluded that by the use of artificial insemination one bull is capable of siring more calves in a single breeding season than most bulls in a lifetime under natural breeding conditions.

Of the three methods of insemination (vaginal, cervical, and uterine), the uterine method gave the best results, while the cervical was superior to the vaginal. The number of spermatozoa per insemination was correlated with fertility. When there were fewer than 800 million total spermatozoa, or 275 million live spermatozoa, or 175 million resistant to cold shock, fertility was below average. The number of resistant spermatozoa was more highly correlated with fertility than either of the other two factors.—N. J. Scorgie.

Kumaran, J. D. S. (1943). **The quality of the egg-yolk for preserving the semen.**—*Indian vet. J.* **20.** 112–121. **1071**

A discussion on media for semen preservation with special mention of egg-yolk buffer medium. The effect of yolk quality in semen preservation is stressed and the importance of a thorough knowledge of the egg is emphasized. The various processes in egg development, the effect of aging of the egg and the influence of the hen's ration on the quality of the yolk are discussed. The common bacterial flora of the egg is listed, and it is said that when eggs are kept dry the chance of bacterial contamination is small.

—P. Bhattacharya (India).

Barker, C. A. V. (1944). **Lactation in a free martin heifer following hormone therapy.**—*Canad. J. comp. Med.* **8.** 216–218. **1072**

A report of lactation in a freemartin, following the intramuscular administration over a period of about three weeks of 236 mg. diethylstilboestrol dipropionate in oil (" dibestranol D.P."). Following enlargement of the mammary gland, fluid was secreted, but it lacked the appearance of normal milk and contained a low butter-fat content.—L. M. Heath (Canada).

See also absts. **1121** (chemical composition of blood of cows and calves), **1043** (role of hypothalamus in cirrhosis), **1031** (action of oestrogens on male dogs), **1061**, **1062** (activity of alkaline phosphatase), **1028** (cell physiology).

POISONS AND POISONING

Kehoe, R. A., Cholak, J., Hubbard, D. M., Bambach, K., & McNary, R. R. (1943). **Experimental studies on lead absorption and excretion and their relation to the diagnosis and treatment of lead poisoning.**—*J. industr. Hyg.* **25.** 71–79. **1073**

Daily administration of 2 mg. soluble lead for 23 months to a human subject, in addition to that normally present in the diet, increased the urinary Pb concentration from 0·032–0·107 mg. per litre, and the blood concentration from 0·029–0·072 mg. per 100 g. whole blood. In the case of alimentary Pb, the faecal level reached a point very near its maximum a few days after administration of Pb. During the control period before administration the mean daily Pb intake was 0·35 mg. and the mean daily output was 0·34 mg. Pb. During the period of Pb administration the mean daily Pb intake was 2·31 mg. and the output in the faeces was 1·94 mg. The mean daily values for the period of 56 days immediately following discontinuance of Pb were 0·298 mg. Pb for the intake and 0·32 mg. for the output in the faeces, while for the entire period of 15 months after discontinuance of Pb administration these values were both 0·32. These data demonstrate that there was no appreciable elimination of Pb from the tissues by way of the alimentary tract after administration of the Pb had stopped. Other data are also given which show that the Pb evacuated from the alimentary tract is largely Pb which has not been absorbed and that the true alimentary excretion of Pb is small. A large proportion of the Pb actually absorbed into the body is excreted by the kidneys. It is shown that the extent of Pb exposure and absorption determines the magnitude of urinary Pb excretion and that the danger threshold can be determined from the urinary Pb values. In the authors' experience Pb poisoning does not occur until the urinary values are greater than 0·10 mg. per litre.

The influence of dietary changes on alimentary Pb absorption, or on the gross retention of Pb in the tissues was studied by means of a series of experimental variations. These consisted of (a) the addition of large and increasing quantities of (1) milk, (2) apple (pectin) in powdered form, (3) ascorbic acid ; (b) a diet very low in both Ca and P ; (c) a diet low in Ca and high in P with daily doses of Na_2HPO_4 taken to the point of tolerance ; (d) a diet very low in P and high in Ca with calcium lactate taken in tolerable doses daily and (e) a normal diet with tolerable doses of Ca taken in the morning and Na_2HPO_4 taken in the evening. Each of these variables was introduced for a period of 28 days with a normal period of 28 days intervening. Little or no effect on the absorption, retention, or excretion of Pb was observed under any of these dietary variations.

An attempt was made to promote the excretion of Pb by giving daily doses of ammonium chloride to the limit of tolerance for a period of two weeks during which time the diet contained minimal quantities of Ca and P and there was a marked shift of the acid-base equilibrium. Despite these effects there was no change in the urinary Pb excretion that was not explained by the accompanying change in the urinary volume due to the diuresis in response to the administration of NH_4Cl. These results indicate that the elimination of Pb from the body is accomplished spontaneously over a considerable period of time and that it is doubtful if it is accelerated by artificial means. It is also shown that Pb metabolism is extremely stable, in fact so stable that it is not influenced importantly by gross changes in the acid-base equilibrium or by Ca and P metabolism of the body.—R. Allcroft.

Alder, F. E. W. (1944). **Chemical analyses of organs from lead-poisoned Canada geese.**—*J. Wildl. Mngmt.* **8.** 83–85. **1074**

The amounts of lead present in the organs—leg

bones, liver, kidneys, spleen, lungs, caeca and heart, of four wild geese affected with lead poisoning, are compared with control analyses on two geese which had been in captivity for a year and were supposedly free from lead poisoning. The affected geese showed lesions typical of lead poisoning and the gizzards contained lead shot in varying stages of wear. A comparison of sizes of organs is included to show the hypertrophy incident to lead poisoning. On analysis the amount of lead in the leg bones showed no correlation with the number of shot found in the gizzard, but there was some correlation between the lead content of the liver and kidneys and the number of shot present. The livers were approximately 3 times the weight of those of the captive geese, the kidneys 2–3 times the weight, and the spleens up to 4 times the weight.—H. P.

SHARMA, K. N. (1944). **Poisonous plants of Nepal.**—*Indian vet. J.* **20.** 165–168. **1075**

A list is given of 121 plants growing in Nepal which are possible causes of fatal poisoning of stock.

—N. D. KEHAR (INDIA).

SHAW, A. O., BISWELL, H. H., FOSTER, J. E., & COLLINS, R. W. (1943). **Some stock-poisoning plants of North Carolina.**—*Bull. N.C. agric. Exp. Sta.* No. 342. pp. 12. **1076**

A pictorial presentation of the ten most dangerous poisonous plants of North Carolina, with details of local names, description, distribution, part of the plant that usually causes poisoning, animals most commonly poisoned, symptoms of poisoning, conditions under which poisoning usually occurs, and treatment. The plants dealt with are :– white snakeroot (*Eupatorium rugosum*), lambkill kalmia (*Kalmia angustifolia*), mountain laurel (*K. latifolia*), black cherry (*Prunus serotina*), common chokecherry (*P. virginiana*), spotted waterhemlock (*Cicuta maculata*), Carolina jessamine (*Gelsemium sempervirens*), yellow buckeye (*Aesculus octandra*), crow poison (*Amianthium muscaetoxicum*), and pink death camas (*Zygadenus densus*).—H. PAVER.

CUNNINGHAM, I. J., & CLARE, E. M. (1943). **A fluorescent alkaloid in rye-grass (*Lolium perenne* L.). V. Toxicity, photodynamic action, and metabolism of perloline.**—*N.Z. J. Sci. Tech.* **24.** 167B–178B. **1077**

A fluorescent alkaloid, perloline, having a photodynamic action has been isolated from perennial ryegrass. Its photodynamic action in particular suggested a possible role in the causation of some of the photosensitivity diseases which occur in New Zealand and of which the aetiology is unknown. A study of its pharmacological actions was initiated and the results are reported. It was demonstrated that mild toxic and photodynamic effects were produced when perloline was introduced parenterally into animals of various species. Toxic effects were not induced in sheep by repeated oral administration of comparatively large amounts of perloline. The alkaloid was rapidly destroyed in animals after administration by intravenous, intraperitoneal, or oral routes. The authors reached the conclusion that perloline ingested with pasture is unlikely to be the cause of acute disease conditions in sheep and that it is unlikely to reach the peripheral circulation in sufficient concentration to cause symptoms of photosensitization.

—M. B. BUDDLE (N. ZEALAND).

BAWA, H. S. (1943). *Sorghum helepense* **Pers poisoning in cattle and sheep.**—*Indian J. vet. Sci.* **13.** 326–327. **1078**

Thirty-five sheep and two cows grazing on young shoots of *S. helepense* died from HCN poisoning.

—N. D. KEHAR (INDIA).

CORKILL, L. (1942). **Cyanogenesis in white clover (*Trifolium repens* L.). V. The inheritance of cyanogenesis.**—*N.Z. J. Sci. Tech.* **23.** 178b–193b. [For part IV, see *V. B.* **12.** 509]. **1079**

Some white clover plants contain cyanogenetic glucosides (80% lotaustralin and 20% linamarin) which, when hydrolysed by the enzyme linamarase, liberate HCN. It has been shown that of the various strains of white clover occurring in New Zealand, the more productive agronomic types tend to have the highest HCN content. In breeding towards a better agronomic type of white clover, it is possible that selection towards higher HCN content may take place. Although there is no evidence that the highly cyanogenetic New Zealand strains are injurious to stock, the glucoside content of certain individual plants is considerably higher than that of the highest known strains. It is possible that the use of such plants in strain building may result in strains of dangerously high glucoside content. It was demonstrated that the cyanogenetic character of white clover is governed by the interaction of the genes Li for the presence of the enzyme linamarase and Ac for the glucoside lotaustralin. Cyanogenetic plants contain both Li and Ac while non-cyanogenetic plants may contain one or neither of the dominant genes Li and Ac. The genes Li and Ac segregate independently. The differences in the quantity of the cyanoglucoside in white clover plants are probably due to the effect of modifying genes. It is possible to produce a non-cyanogenetic strain free from lotaustralin and of desirable agronomic type.

—M. B. BUDDLE (N. ZEALAND).

HEIM, J. (1944). Bulbärparalysis progressiva. Eine bei Pferden in der Slowakei häufig vorkommende Rachenlähmung. **[Progressive bulbar paralysis in the horse].**—*Berl. Münch. tierärztl. Wschr./Wien. tierärztl. Mschr.* Feb. 18th. 58–59. **1080**

H. describes a number of cases of progressive bulbar paralysis in horses which he has encountered in Slovakia since 1902. In each case the animals had been fed beet tops, and HUTYRA & MAREK are quoted in support of the suggestion that they may contain a toxic substance responsible for producing the condition. The main symptoms were restlessness, cold extremities, neighing, salivation and inability to swallow either food or water. Therapy was often successful : it consisted of injections of pilocarpine (0·2 g.) and, in weak animals, of artificial feeding.

H. also describes somewhat similar symptoms occurring in a herd of cows. Rabies was diagnosed but H. doubts the diagnosis and considers the cause to have been poisoning by *Colchicum autumnale* which was growing in great profusion.

[HUTYRA, MAREK & MANNINGER. 4th Edit. (1938). Vol. 3. p. 361, describe *progressive* bulbar paralysis in horses and state that it has been recorded in North Belgium, France and Germany and is believed to be caused by food poisoning (by turnips), although infection and other possible aetiological factors have not been entirely excluded. These authors state that most cases described as *acute* bulbar paralysis in horses and cattle are probably cases of botulism.]—E. G. WHITE.

NISNOVICH, L. (1944). Interesante caso de intoxicación en bovinos por maíz parasitado con hongos. **[Poisoning of cattle by fungus-infected maize].**—*Rev. Med. vet., B. Aires.* **26.** 156–160. **1081**

Symptoms not unlike those of hypocalcaemia were observed in cattle. Some of the animals were affected with giddiness, convulsions, and blindness, while others were lethargic or comatose. Muco-haemorrhagic diarrhoea was a symptom in some cases. On P.M. examina-

tion, the outstanding feature was the presence of submucous haemorrhages in the stomach and small intestine.

The symptoms and lesions were attributed to poisoning by *Ustilago maidis*, which was found parasitizing the maize present in the animals' food. Treatment consisted of change of diet, subcutaneous injection of pilocarpine in badly affected cases, and the administration of magnesium sulphate in the less severe cases.

—ISOBEL W. BROCKLEHURST.

LATVEN, A. R., & WELCH, A. D. (1944). **Sulfamerazine (2-sulfanilamido-4-methylpyrimidine). III. The comparative activity of sulfamerazine, sulfadiazine and sulfapyridine in the production of hemolytic anemia in the mouse.**—*J. Pharmacol.* **81.** 301–306. [For Part I, see *V. B.* **14.** 138. Part II not traced]. **1082**

The haemolytic anaemia-producing properties of sulphapyridine, sulphamerazine and sulphadiazine have been evaluated in mice by determination of the number of mice made anaemic by various concentrations of sulphonamides in the blood. The amount of a sulphonamide present in the blood necessary to produce a 50% incidence of anaemia was found to be 2·8 mg. sulphapyridine, 33·0 mg. sulphadiazine, and 31·0 mg. sulphamerazine per 100 ml. of blood. A high concentration of sulphamerazine and sulphadiazine within the red blood corpuscles was necessary for the production of anaemia, but sulphapyridine produced the same degree of anaemia when the concentration in the erythrocyte was only about one-tenth as great. The possible clinical significance of these findings is discussed.—G. D. S.

KIRK, R., & HENRY, A. J. (1944). **Observations on the toxicity of stilbamidine.**—*Ann. trop. Med. Parasit.* **38.** 99–118. **1083**

It was found that in cases of kala-azar treated with stilbamidine, toxic and sometimes fatal effects developed some time after cessation of treatment and apparent cure. Investigations showed that the toxic effects were due, at least in part, to chemical changes which had occurred in old solutions of the drug.—D. D. OGILVIE.

See also absts. **1121** (mineral and plant poisons in India).

PHARMACOLOGY, THERAPEUTICS AND DISINFECTION

—. (1943). **Penicillin and other antibiotics produced by microörganisms. An annotated bibliography.** pp. 104. New York: E. R. Squibb & Sons. [8vo]. [Revised Edit.] **1084**

This bibliography gives over three hundred abstracts of papers on penicillin and other antibiotics. The abstracts are arranged in chronological order in two groups, *viz*, substances produced by moulds and substances produced by bacteria. The pamphlet gives a useful collection of indexed references for workers on chemotherapy.—E. BOYLAND.

ROMANSKY, M. J., & RITTMAN, G. E. (1944). **A method of prolonging the action of penicillin.**—*Science.* **100.** 196–198. **1085**

The action of penicillin can be prolonged by incorporating the material in a beeswax + peanut oil mixture. Such preparations are stable and a single injection will give an effective blood concentration for seven hours. Cases of gonorrhoea have been cured by single injections of the mixture.—E. BOYLAND.

BONDI, A., Jr., & DIETZ, C. C. (1944). **Production of penicillinase by bacteria.**—*Proc. Soc. exp. Biol., N.Y.* **56.** 132–134. **1086**

Penicillinase, an enzyme which destroys penicillin, is produced by many bacteria including *Bacterium coli*, *Bact. shigae*, *Bacillus anthracis*, and *Alcaligenes faecalis*. Many of the Gram-negative bacilli which occur in the intestine destroy penicillin. The significance of these facts in relation to penicillin therapy is pointed out. Penicillinase may be of use in the cultivation of body fluids containing penicillin.—E. BOYLAND.

BONDI, A., Jr., & DIETZ, C. C. (1944). **Relationship of penicillinase to the action of penicillin.**—*Proc. Soc. exp. Biol., N.Y.* **56.** 135–137. **1087**

Some organisms (*e.g. Bacillus anthracis*) produce penicillinase, but are still inhibited to some extent by penicillin, while other species (*e.g. Salmonella typhi* and other salmonella) are inhibited by high concentrations of penicillin but do not contain penicillinase. When various organisms were rendered resistant to penicillin *in vitro* by cultivation in increasing concentrations, they did not produce penicillinase. Penicillinase production by a bacterium is an important factor in its resistance to penicillin although not necessarily the only one.—E. B.

LEVADITI, C., PÉNAU, H., PÉRAULT, R., ERICHSEN, M. L., & BENOIST, D. (1944). Nouvelles constatations concernant le principe staphylolytique sécrété par le *Penicillium, corylophylum* Dx. **[The staphylolytic principle secreted by** *Penicillium corylophylum***].**—*C. R. Soc. Biol. Paris.* **138.** 5–7. **1088**

The factor produced by *P. corylophylum* and called "corylophyline" has been obtained in the dry state. It is produced in maximum yield on Czapek-Dox medium containing 6% glucose. The factor is extremely active in inhibiting staphylococci and it also inhibits *Bacterium coli*, streptococci, and *Trypanosoma equiperdum*. It has no action on spirochaetes and paramoecia. Its antistaphylococcal action is inhibited by serum, and it has no therapeutic effect when tested in rabbits.—E. BOYLAND.

ROBINSON, H. J., GRAESSLE, O. E., & SMITH, D. G. (1944). **Studies on the toxicity and activity of streptothricin.**—*Science.* **99.** 540–542. **1089**

The L.D.50 of streptothricin for mice appears to be about 200,000 units per kg. body weight when given intravenously or subcutaneously and about 1,000,000 units per kg. when given orally. In addition to inhibiting the growth of *Bacterium coli*, it is effective against organisms of the colon-typhoid and salmonella groups, preventing death of mice infected with such organisms. When given by mouth, it reduces the lactose-fermenting bacteria of the intestine.—E. BOYLAND.

JOHNSON, F. H., & SCHNEYER, L. (1944). **The quinine inhibition of bacterial luminescence.**—*Amer. J. trop. Med.* **24.** 163–175. **1090**

Recent advances have made it possible to interpret the effects of a drug upon a given enzyme system in relation to concentration, temperature, and hydrostatic pressure, thus revealing the fundamental mechanism of drug action. An investigation is described in which this type of analysis is extended to include the inhibition of bacterial luminescence by quinine, the light-emitting oxidative enyzme system of luminous bacteria being particularly well suited for this purpose.

The investigation showed that the intensity of luminescence in non-proliferating luminous bacteria is immediately decreased by quinine. Generally, the decrease varies with the temperature at which tests are made and is greatest at the normal optimum living temperature of the organism. The effect is also sensitive to hydrostatic pressure, which in certain conditions may entirely abolish it.—D. D. OGILVIE.

POTH, E. J., & ROSS, C. A. (1944). **The clinical use of phthalylsulfathiazole.**—*J. Lab. clin. Med.* **29.** 785–808. **1091**

In 1943 the authors reported experimental studies on phthalylsulphathiazole as an intestinal antiseptic and showed it to be 2–4 times as effective as succinylsulphathiazole in altering the coliform flora of the alimentary canal of dogs. The clinical exploration of the use of the drug in the human subject is now described. The characteristic of phthalylsulphathiazole of greatest clinical interest is the restriction of its activity to the alimentary tract. Only about 5% of the oral dose is excreted in the urine and ordinarily the blood concentration does not exceed 1·5 mg. %. Judged on its ability to suppress coliform organisms, phthalylsulphathiazole is approximately twice as active as succinylsulphathiazole. It is also effective in considerably reducing the vegetative forms of clostridia in the intestines. The mechanism of action of phthalysulphathiazole has not been fully elucidated, but faecal examination has shown that the amounts of the drug itself and of a "free" diazotizable degradation product resembling sulphathiazole vary between wide limits. This "free" compound may attain a concentration of 1,250 mg. %.

Phthalylsulphathiazole in doses of about 0·125 g. per kg. body weight per day was tested in a large number of alimentary disorders in the human subject. It was well tolerated even when employed for several months and was effective in ulcerative colitis, nonspecific diarrhoeas, bacillary dysentery, and for the preoperative preparation of the large intestine.—D. D. O.

JOHNSON, S. D. (1944). **The prognosis and treatment of mastitis.**—*Cornell Vet.* **34.** 99–131. **1092**

J. reports the results of his use of various intramammary medicaments for the treatment of mastitis. He remarks that practitioners in the U.S.A. have found these drugs less effective than published reports had led them to expect [an observation with which many workers in Great Britain will agree].

Acriflavine was used in strengths of 1 : 2,000 and 1 : 4,000, in water and in both 10% and 20% sugar solution, and at 1 : 6,000 and 1 : 8,000 in water alone. All clinical mastitis cases regardless of aetiology were treated, but the results are summarized to show the effect in various infections. The best results (80% quarters "clinically improved") followed the use of 1 : 4,000 acriflavine in 10% glucose solution. Some acute cases were treated by udder infusion with apparent benefit.

Results of using 5% silver oxide in oil were similar to those reported by other workers; although 71% of all udders treated were freed from infection, J. states that results were not impressive clinically.

With tyrothricin used in 30–100 mg. doses and left in the lactating udder for 8–15 hours, results were similar to those already reported. Best results were obtained in dry cows, with 100 mg. doses left in for 12–16 hours. Repeated treatment was often required.

With sulphanilamide given *per os*, little success was achieved either clinically or bacteriologically against chronic streptococcal infections, although dosage was inadequate in some cases. With sulphanilamide-in-oil udder infusions both clinical and bacteriological cures were fewer than those reported by other workers.

The methods of choice for treatment of mastitis are discussed.—R. M. ARNOLD.

GILLAIN, J. (1942). Essai de traitement de la trypanosomiase virulente du porc avec la congasine. **[Treatment of virulent porcine trypanosomiasis with congasine].**—*Bull. agric. Congo belge.* **33.** 108–109. **1093**

Congasine (surfen C) given intramuscularly as a 2% solution, at a dose rate of 1 g. per kg. body weight failed to modify the course of a *Trypanosoma simiae* infection in a pig, and failed to protect pigs against an injection of *T. simiae* given 24 hours after administration of the drug.—U. F. RICHARDSON.

DZASOKHOV, G. S. (1940). Ispytanie preparata tipa piroblyu pri eksperimental'nom nuttallioze loshadeĭ. **[Test of a product of the "piroblue" type in experimental *Nuttallia equi* infection].**—*Trud. vsesoyuz. Inst. eksp. Vet.* **15.** 128. [French summary]. **1094**

Tests were made on a substance of piroblue type (compound of trypanblue with bile salts and acids), prepared at the Moscow Institute of Experimental Pharmaceutical Chemistry. Intravenous administration of a 2% solution in distilled water, at a dose rate of 0·02 g. per kg. live weight, produced no adverse symptoms in two healthy horses. Pulse, temperature, and general condition remained normal.

Five horses were artificially infected with *Nuttallia equi*, and all developed symptoms of piroplasmosis within 8–11 days. Of these animals, three were treated with the piroblue preparation (0·005 g. per kg. live weight) intravenously, and two were kept as untreated controls. The animals were kept under observation for about two months. There was no indication of a reduction in the number of blood parasites, nor of the relief of symptoms in the treated cases. Two of the treated animals and both controls died. It is concluded that this preparation has little therapeutic value against experimental *N. equi* infections.—J. A. C.

PLUMB, G. H. (1944). *Lethane 384 Special* **for control of the brown dog tick.**—*J. econ. Ent.* **37.** 292–293. **1095**

A dust containing 5 g. Lethane 384 Special, 2 g. magnesium carbonate, and 100 g. pyrophyllite killed the unfed male and female stages of *Rhipicephalus sanguineus* within 24 hours of application, but engorged nymphs required a second application five days after the initial dressing. Dusts containing 5% tetraethylthiuram disulphide and 10% tetramethylthiuram disulphide were not effective on unfed larvae.—W. M.

VENKATACHALAM, K., RATNAGIRISWARAN, A. N., SASTRY, M. R. S., RAMASWAMY, R., & NAYAR, C. K. V. (1943). **On the parenteral administration of seawater in the treatment of canine mange—sarcoptic and follicular.**—*Indian J. vet. Sci.* **13.** 244–246. [Reprinted *in Indian vet. J.* **21.** 7–11 (1944)]. **1096**

Subcutaneous, intravenous, or intraperitoneal administration of sea water is stated to have cured 20 dogs of sarcoptic and 30 of follicular mange. 20–30 injections of 0·5 ml. per kg. body weight, up to a maximum of 20 ml. daily or on alternate days, were required. A case of ringworm in a bull [not confirmed microscopically] was also cured by two such courses of intravenous injections, in which doses of 40 and 60 ml. respectively were given. Caution is to be exercised in computing dosage for puppies below six months of age, and for dogs emaciated or affected with nephritis. If necessary, the treatment may be repeated after an interval of ten days. Local application of seawater failed to cure.

—M. A. KHAN (INDIA).

BARKER, C. A. V. (1944). **Experience with ascorbic acid therapy for sterility in cows.**—*Canad. J. comp. Med.* **8.** 192–195. **1097**

Ascorbic acid was used on six cows in an attempt to stimulate or aid conception. It was ineffective in three instances. In one animal it appeared to be of value in that conception occurred twice following its use; this animal had failed to conceive after several previous matings. The other two animals conceived

following treatment; they had previously failed to conceive after only one mating.

—P. J. G. PLUMMER (CANADA).

NEUFELD, F., & SCHÜTZ, O. (1941). Untersuchungen über die Sonderstellung des Alkohols als Desinfiziens und über die Rolle der Adsorption bei Desinfektionsversuchen, insbesondere bei der Händedesinfektion. **[The special value of alcohol as a disinfectant and the role of adsorption in disinfection tests, especially in disinfection of the hands].**—*Z. Hyg. InfektKr.* **123.** 396–416. **1098**

Alcohol differs from other disinfectants (such as mercuric chloride, zephirol and sagrotan) in not being adsorbed on surfaces. The strongly adsorbed disinfectants may be removed from solution by dead organisms or inert material so that an effective concentration is not obtained. It is probably due to the fact that alcohol is not strongly adsorbed that it is not effective in dilute solution. The complex disinfectants are adsorbed on the surface of the skin while alcohol can penetrate quickly and deeply and so give more effective disinfection. The addition of iodine or the dyes dalia [? dahlia violet] and trypaflavine to alcohol does not increase its disinfecting power. It does, however, make it easy to see where the alcohol has been applied to skin. Although alcohol penetrates the skin other disinfectants dissolved in the alcohol are not carried into the skin by alcohol. The disinfecting action of alcohol is increased by the addition of turkey red oil.—E. BOYLAND.

JORDAN, R. C., & JACOBS, S. E. (1944). **Studies in the dynamics of disinfection. II. The calculation of the concentration exponent for phenol at 35°C. with *Bact. coli* as test organism.**—*J. Hyg., Camb.* **43.** 363–369. [Authors' summary copied *verbatim*]. **1099**

1. Disinfection curves obtained from data on the action of phenol on *Bact. coli* at 35°C. under conditions such that unfavourable circumstances, other than the presence of the germicide, were as far as possible eliminated, have been used for the calculation of the concentration exponent for phenol, i.e. n in the formula $C^n \times t = K$. The death-rate was not constant throughout the germicidal process but showed initially a phase of slow but increasing death-rate which merged gradually into a phase which was treated (for reasons given) as one of constant rate. This was also the maximum rate for any given phenol concentration.

2. The virtual sterilization times (*v.s.t.*'s), i.e. the times in min. required for the mortality to reach 99·999999% as determined by slight extrapolation of the log survivors-time curves, the 99·9% mortality times and the 99% mortality times could all be used for the calculation of value of n for phenol as they all gave satisfactory linear relations between log concentration and log time.

3. The 50% mortality times did not show a satisfactory linear relation between log phenol concentration and log time over the full concentration range, and at this mortality level the concentration exponent appeared to increase for concentrations above 4·62 g. phenol per l.

4. The value of n varied according to the mortality level chosen. It was $5{\cdot}8421 \pm 0{\cdot}1876$, $6{\cdot}6062 \pm 0{\cdot}2034$ and $6{\cdot}9638 \pm 0{\cdot}2164$ when the *v.s.t.*'s. 99·9% mortality times or 99% mortality times were used. The differences between the first and second and first and third values are significant, but that between the second and third values is not. The value calculated from the *v.s.t.*'s is regarded as being the most important.

5. Evidence was obtained that, as expected on theoretical grounds, n increases for very low concentrations of phenol. If the aberrant value obtained at the lowest phenol concentration be omitted from the calculations, the value of n calculated from the *v.s.t.*'s becomes $5{\cdot}6588 \pm 0{\cdot}1422$, but the decrease is not significant.

6. The maximum death-rate was related to the phenol concentration according to the expression $k_m = 9{\cdot}1743 \times 10^{-6} C^{5{\cdot}0752}$, where k_m is the maximum (logarithmic) death-rate per min. and C the concentration of phenol in g. per l.

DEOME, K. B. (1944). **The effect of temperature, humidity, and glycol vapor on the viability of airborne bacteria.**—*Amer. J. Hyg.* **40.** 239–250. [Author's summary copied *verbatim*]. **1100**

1. Apparatus is described with which rapid estimations can be made of the death rate of air-borne organisms in the presence or absence of glycol vapors under rigidly controlled conditions. 2. In the absence of glycol vapor the death rate of *S. pullorum* dispersed from water into dust-free air streams increases as the temperature is increased from 28 C to 37 C and as the relative humidity increases from 15 per cent to 80 per cent (the range tested). 3. The germicidal power of a given concentration of triethylene glycol vapor decreases as the temperature is increased from 28 C to 37 C and as the relative humidity deviates from approximately 45 per cent. The effect of these factors appears to be cumulative. At relative humidities of 15 per cent and 80 per cent, the extremes tested, triethylene glycol vapor had no appreciable germicidal power. 4. The concentration of propylene glycol required to produce a given reduction of the control death rate is approximately 100 times that of triethylene glycol. 5. The observed decreases in the number of viable organisms are due to lethal effects and not to the mechanical removal of organisms.

COCA, A. F. (1944). **The adjuvant effect of aerosol upon the germicidal action of cadmium chloride.**—*J. Lab. clin. Med.* **29.** 689–691. **1101**

The addition of 1% aerosol OT (sodium dioctyl sulphosuccinate) to a 1% solution of cadmium chloride in 30% alcohol increased the fungicidal action of the cadmium. Such a solution has been effective in treatment of dandruff, eczema, and ringworm. Cadmium chloride and aerosol OT appear to have a synergistic effect in preventing the growth of *Monilia albicans*.

—E. BOYLAND.

See also absts. **1082** (sulphonamides), **1083** (stilbamidine), **912, 917, 1118** (treatment of mastitis), **926** (of TB.), **996** (of canine rickettsiasis and piroplasmosis), **959** (of equine piroplasmosis), **1138** (of trypanosomiasis with phenanthridinium compound), **1035** (of equine colic), **1032** (hormone therapy of neoplasms), **1115** (aerial disinfection), **1127** (disinfection of poultry manure).

HYGIENE, PUBLIC HEALTH, AND VETERINARY SERVICES

—. (1944). **Livestock sanitary laws of Montana: also rules and regulations and orders of the Montana Livestock Sanitary Board including regulations governing inspection of dairies, milk plants, slaughter houses and meat inspection and standards for milk and cream.** Vol. 2. No. 1. pp. 206. Helena, Mont.: Livestock Sanitary Board. [8vo]. **1102**

Under the livestock sanitary laws, the chief executive officer of the Livestock Sanitary Board is the state veterinary surgeon. He also acts as secretary to the Board. Deputy state veterinary surgeons are appointed as full-time officials in charge of definite districts in the

state. The functions of the Board are generally to foster, promote, and protect the livestock industry of the state.

The enactments specify the exact procedures to be followed in a large number of matters including the licensing of milk plants and dairies, the examination of abattoirs, the sale and distribution of tuberculin, the registration of stallions, meat inspection, movements of animals, and the general inspection of animals for disease. The approved methods of dealing with the following diseases are set out in detail :– cattle, pig, and sheep scabies (by the use of lime and sulphur or nicotine and sulphur dips, or, in the case of cattle, of crude oil emulsion), TB. (test and slaughter), anaplasmosis (quarantine—infected animals fattened for slaughter), bacillary icterohaemoglobinuria (quarantine and vaccination), rabies (quarantine and destruction), equine encephalomyelitis (vaccination), swine erysipelas (quarantine and serum treatment), brucellosis (agglutination test, quarantine, slaughter with indemnity, calfhood vaccination, etc.), anthrax (quarantine, vaccination, and carcass disposal), dourine test and slaughter), glanders (test and slaughter), necrobacillosis (quarantine and treatment), swine fever (quarantine and vaccination by serum-virus method), vibrionic abortion (quarantine), infectious anaemia (quarantine), pullorum disease (test and restriction on sales), and foot and mouth disease and other diseases which are not normally present in the U.S.A. (notification to U.S. Department of Agriculture and action at the Department's direction).—D. D. O.

STEUER, W. (1941). Über die Lebensdauer von Ruhrkeimen in Vollmilch und Buttermilch. **[The survival of dysentery bacilli in whole milk and buttermilk].**—*Arch. Hyg., Berl.* **126.** 233–238. **1103**

S. carried out tests to determine the longevity of dysentery bacilli in milk, which was inoculated and kept at 37°C., at room temperature, and at –3°C. for several days during which subcultures from the milk were made.

In inoculated sterilized milk, *Bacterium shigae* and *Bact. flexneri* survived for the maximum period tested, *viz*, 20 days. In slightly sour milk they survived at 37°C. for one, and at room temperature for three days ; at –3°C., *Bact. shigae* survived for three and *Bact. flexneri* for 12 days. In completely sour milk (acidity grade 37–42) survival time was three days or less in incubated milk, 0–5 days (exceptionally 8 & 10 days) in milk at room temperature and for as long as 15 days in frozen milk. The presence of *Bact. coli* in the milk samples resulted in a shorter survival time of the dysentery bacilli.

Similar results were obtained with buttermilk, in which the dysentery bacilli survived for less than a day in incubated milk, for 1–13 days in milk at room temperature and for 1–14 days in frozen milk.

E type dysentery bacilli [? *Bact. sonnei*] were more resistant than the above-named types when used in some of the above tests.

S. concludes that there is a small risk of the spread of bacillary dysentery by milk.—J. E.

LÔBO, J. S. (1943). A inspecção veterinária nos matadouros. **[Veterinary inspection of abattoirs in Portugal].**—*Rev. Med. vet., Lisboa.* **38.** 245–253. **1104**

Veterinary inspection of meat and meat products is carried out at the present time in only three-quarters of Portugal. L. believes that this state of affairs should be remedied as soon as possible, since the veterinary surgeon is the person competent to judge the fitness of meat for human consumption. It is suggested that the cost of providing for such veterinary inspection might be covered in part by a tax on the use of abattoirs. The need for veterinary advice on the design, equipment, and management of abattoirs, is emphasized.

—ISOBEL W. BROCKLEHURST.

CAUDILL, F. W., & MEYER, M. A. (1943). **An epidemic of food poisoning due to pasteurized milk.**—*J. Milk Technol.* **6.** 73–76. **1105**

In a town in Kentucky 23 of 32 children and 9 of 80 persons over ten years old using one source of milk supply developed gastro-enteritis ; there were no cases among persons using other sources of supply.

The average time between ingestion of milk and onset of illness was four hours, and this short period suggested that the causal agent was not a micro-organism but a preformed toxin.

Examination of the pasteurization plant and the farm revealed grossly insanitary conditions, including defective plant with pigs running loose around the barn. Waste from the plant was run out in front of buildings ; cooling of the milk was inadequate. Ninety-eight cows were examined, nine of which showed clinically infected quarters. Bacterial examination revealed the presence of non-haemolytic staphylococci and streptococci.

It was concluded that staphylococci were passing into the milk and producing toxins when the milk was left overnight in the pasteurization vat at a temperature as high as 76°F. Although pasteurization on the following morning would kill the organisms, it was unlikely to destroy the toxin. No staphylococci were found in the pasteurized milk on the day when the outbreak commenced.—H. E. BYWATER.

GREIFINGER, W., & SILBERSTEIN, J. K. (1944). **Salmonella food infection in military personnel. An outbreak caused by *S. oranienburg*, *S. typhi murium*, and *S. anatum*.**—*J. Lab. clin. Med.* **29.** 1042–1053. **1106**

This is a report of an outbreak of gastro-enteritis in 115 military personnel. The source of the infection was not confirmed, but some imperfectly refrigerated fish came under suspicion. *S. oranienburg* was isolated from the faeces of 100 of the affected persons, *S. typhi-murium* from 27, and *S. anatum* from 44.

Sulphaguanidine appeared to be effective in the therapy of *S. typhi-murium* infection, but had no apparent effect on the other two organisms.

Sulphasuxidine had a bacteriostatic effect on *S. oranienburg* and *S. anatum* and appeared to shorten the carrier state markedly.—ISOBEL W. BROCKLEHURST.

HARBITZ, F. (1943). Veterinaervesenets betydning for bekjempelsen av smittsomme sykdommer hos menneskets. Et overblikk. **[The importance of veterinary work in the control of infectious diseases of man. A review].**—*Norsk VetTidsskr.* **55.** 137–173. **1107**

In this lecture to veterinary students, H. drew attention to the fact that human infective diseases are for a great part remarkably species-specific, *i.e.* many of them do not also affect animals. Those which are not species-specific form the main theme of this paper.

Foot and mouth disease occurs infrequently in Norway ; in 1940 there was a small outbreak in which 1,377 cattle and 1,700 pigs were slaughtered. In general, man is not susceptible ; the virus has been accidentally present in smallpox vaccine without causing disease in man, and such contaminated vaccine has been widely used on human beings (on 8,000 persons in 1930).

From 100–200 cases of undulent fever due to *Brucella abortus* infection have been observed in Norway during the last decade.

During a severe outbreak in cattle in 1937, 103 animals were affected and one man died from anthrax. Tabanid flies were believed to have played a part in this outbreak.

One fatal case of swine erysipelas infection in a veterinarian has been recorded in Norway. The infection became localized in the brain.

Tularaemia has been observed in Norway in about 50 persons without the occurrence of any fatalities.

Leptospirosis (Weil's disease) was first diagnosed in Norway in 1926; seven cases were observed in the succeeding decade and 35 more after 1936. There were eight deaths. The infection, commonly carried by rats, has also been found in foxes.

One case of listeriasis in man has been observed in Norway.

Trichinosis rarely occurs in human beings in Norway, but a severe outbreak occurred in 1940 when 680 German soldiers as well as seven Norwegians became affected. Effective control measures were taken.

Echinococcosis is not rare in the north and has been seen in reindeer and in their owners.

Myiasis caused by ox and reindeer warbles has been seen in human beings, in whom the larvae are found usually under the skin of the shoulder or arm.

Milk-borne streptococcal infection in man is well known in Norway, usually occurring in small outbreaks, but one large outbreak involving hundreds of persons occurred in 1907.

Meat poisoning (paratyphoid) occurs occasionally and affected 700 persons in a prison in 1940.

The TB. problem in Norway is discussed at length. As, however, bovine TB. is scarce the extent of bovine type infection in man is negligible: in 1937 only 1·2% of 11,831 cattle reacted to tuberculin. Abattoir statistics also indicate that the incidence is low. TB. is, however, still an important cause of death in human beings.—J. E.

—. (1944). **Nova Scotia enacts a provincial veterinary service plan.**—*Canad. J. comp. Med.* **8.** 218–219. **1108**

Under this plan, the municipality and the County Farmers' Association must guarantee the veterinarian $2,000 a year; half of this sum is raised by the municipality and the County Farmers' Association ($500 by each) and the other $1,000 is granted by the Department of Agriculture. This retaining grant is to be used to pay transportation costs as well as to guarantee a minimum income. Fees for veterinary services must be uniform, regardless of the distance travelled, and must be agreed upon by the municipality and the veterinarian in advance; an additional charge can be made to cover the cost of medicine or other material required for handling the case.—T. Moore (Canada).

Labelle, G. T. (1944). **The duties of a seaport inspector.**—*Canad. J. comp. Med.* **8.** 159–164. **1109**

L. defines veterinary sanitary police work as "the practical application of prophylaxis in connection with live stock". The work dealt with is governed by the Animal Contagious Diseases Act and regulations made thereunder, and is enforced by the Health of Animals Division of the Dominion Department of Agriculture. The duties of a seaport veterinary inspector are described, as are the various regulations governing the importation of livestock, hides, skins, glue stock, bones, hoofs, horns, meat, and meat products. The duties of a seaport inspector, in connexion with the export of livestock, are also briefly described.—Thos. Moore (Canada).

Campbell, D. M. (1944). **Veterinary service at an army post.**—*Vet. Med.* **39.** 81–142. [Reprinted under the title "*Army Veterinary Sanitary Inspection*" (Campbell, D. M.). pp. 64. Chicago: Veterinary Magazine Corporation. [4to]. (1944)]. **1110**

The March (1944) issue of *Veterinary Medicine* is devoted to veterinary aspects of the inspection and control of meat and milk and their products. Chapters deal respectively with:—Veterinary Service at an Army Post; The Dairy Industry; Dairy Plant Inspection; The Fluid Milk Plant; The Creamery; The Milk Condensery; The Ice Cream Plant; The Cheese Factory; Use of the Laboratory; Dairy Farm Inspection; Produce Establishments; Poultry Slaughtering; Shell Eggs; and Egg Powder.

Kelser, R. A. (1944). **The Army Veterinary Corps.**—*Cornell Vet.* **34.** 173–182. **1111**

The Director, Veterinary Division, Surgeon General's Office, reviews the functions and general position of the Veterinary Corps of the U.S. Army. In addition to the meat, and meat and dairy products inspection service which is its chief duty, it is responsible for the care and treatment of all sick and injured animals and for the supervision of the many thousands of army dogs. It is also responsible for disease prevention, breeding, and other functions at remount depots. Research activities are conducted at the Army Veterinary School, Washington and at the Veterinary Research Laboratory, Front Royal, Virginia.

Veterinary Corps food inspection includes inspections for purchase, initial delivery, storage, removal, and issue to the troops. Although, since the beginning of the present war, the cost of procurement of meat, and meat and dairy products for the army has totalled billions of pounds and shipments have been made all over the world, the efficiency of inspection has been such that no serious outbreaks of disease have resulted from the food supply.

In overseas countries where local food supplies are utilized, the Veterinary Corps provides a complete inspection service including *ante-* and *post-mortem* inspection at abattoirs. In many parts much has been done to improve sanitary conditions and to develop the local meat and milk supply. This has been particularly evident in Iceland.—D. D. Ogilvie.

Hardenbergh, J. G. (1943). **Veterinary organization for wartime service.**—*Proc. 46th Meet. U.S. Live Stk sanit. Ass., 1942.* pp. 13–18. **1112**

For the organization of veterinary personnel in the U.S.A., questionnaires and enrolment forms were sent out to about 13,000 members of the profession. The answers to these have enabled the Procurement and Assignment Service to place each veterinarian in one of the four categories, *viz*, military, governmental, industrial, and civil. The veterinary schools have responded to the shortage of veterinarians caused by the war by adopting an accelerated curriculum, and eliminating vacations. This has enabled veterinary students to complete the course, excluding the pre-vocational training, in three years instead of four. Inter-association activities with many other bodies have directly assisted the war effort as have the operations of the Federal and state bureaux. The most direct contribution of the profession has of course been through the Army Veterinary Corps.—D. D. Ogilvie.

See also absts. **915** (milk inspection), **1014** (trichinosis in Canada).

TECHNIQUE AND APPARATUS

Seshacharyulu, E. V., & Kothavalla, Z. R. (1943). **Reutilization of used agar media, I.**—*Indian J. vet. Sci.* **13.** 241–243. **1113**

Water is added to used media in the proportion of 18 : 40, boiled for 30 sec., filtered through cottonwool, and kept for 1½–2 hours in an air oven at 95°–100°C.

This is again boiled, filtered through cloth, the volume restored with water, the pH adjusted to 6·8, and autoclaved at 15 lb.'s pressure for 25 min.

In 475 parallel tests of plating milk for bacterial counts, there was no significant difference between reclaimed and fresh media.—M. ISRAIL (INDIA).

MUKERJI, A. K., & MAPLESTONE, P. A. (1943). **Preservation of hook worm ova in faeces.**—*Indian med. Gaz.* **78.** 136–141. **1114**

Of a considerable number of substances tried, 1% NaCl solution proved the most satisfactory, when the faeces were diluted 1 : 30 with the solution. Eggs were then well preserved for up to three weeks. Formalin, antiformin, brilliant green, acriflavine, and thymol were less efficient for this purpose.

—G. D. BHALERAO (INDIA).

PUCK, T. T., WISE, H., & ROBERTSON, O. H. (1944). **A device for automatically controlling the concentration of glycol vapors in the air.**—*J. exp. Med.* **80.** 377–381. **1115**

In order to produce a constant concentration of glycol vapour in the air, an apparatus was devised in which the output was automatically regulated according to the amount of chemical present. The vapour was condensed on a cooled, rotating copper disc which normally reflected a ray of light on to a photo-electric cell which in turn controlled the emission of glycol through a relay system. Fluctuations in the illuminating intensity were produced by the film of glycol condensing on the disc.

The concentration of glycol vapour was regulated to within a few thousandths of a milligramme per litre and was unaffected by smoke or dust.—R. E. GLOVER.

SHARRAR, M. A. R. (1943). **A universal apparatus for collecting urine of bullocks at work.**—*Indian J. vet. Sci.* **13.** 330–331. **1116**

Description of an apparatus for collecting urine of bullocks working in draught.—S. K. TALAPATRA (INDIA).

See also absts. **916** (mastitis tests), **955** (sternal puncture diagnosis of nervous type trypanosomiasis), **977** (sedimentation rate of influenza virus), **991** (study of details of mouse C.N.S.), **1071** (semen preservation).

MISCELLANEOUS

FRICK, E. J., & HANEY, D. R. (1944). **A veterinary economic survey.**—*J. Amer. vet. med. Ass.* **105.** 140–141. **1117**

An attempt is made to assess the monetary value of veterinary service in general practice. The basis of the assessment is a month's operations of nine veterinarians in Oklahoma, Missouri, Nebraska, and Kansas comprising the treatment of 2,543 cattle, 106 horses, 74 sheep, and 4,390 pigs. Analysis shows that about $5,917.80 was charged for veterinary services of which approximately $2,228.40 was for treatment and operations and $3,689.40 for preventive measures. "The total value of the animals which would have died at normal mortality" is calculated at about $19,506.00. Substracting from this, $2,228.40 for treatment and operations shows a profit to owners of approximately $7.10 for each $1.00 spent for veterinary service. This is regarded as a conservative figure since it does not take into account saving of milk, prevention of weight loss, etc. On the basis of the fees charged, the average cost of veterinary services is approximately $1.35 per $100 worth of cattle, $5.25 per $100 worth of horses, and $1.00 per $100 worth of pigs.—D. D. OGILVIE.

—. (1944). **Government of Northern Ireland : Agricultural Enquiry Committee. Evidence of the Northern Ireland Veterinary Medical Association.**—*Vet. Rec.* **56.** 258–264. **1118**

The evidence tendered and suggestions made include the following.

Animal Husbandry.—Emphasis is laid on the education of the farming community in animal husbandry.

Veterinary Research.—The general extension of research and the provision of a diagnostic centre are necessary in Northern Ireland.

Livestock Improvement.—Emphasis is laid on the need for more scientific methods of selection for breeding. It is suggested that the Horse-Breeding Acts of 1926 and 1937 should be amended to give consideration to the breeding performance of an animal as well as to its conformation and soundness. With cattle, the chief source of waste of good breeding stock is the disposal of stock bulls before they are proven sires.

Eradication of Diseases.—Eradication of diseases in livestock depends on adequate education of stock owners, the provision of hygienic farm buildings, and the simultaneous application of agreed measures on all farms. Attempts to deal with animal disease on a voluntary basis in Northern Ireland are regarded as futile. It is also regarded as necessary for the improvement of conditions in this respect in Northern Ireland that similar and simultaneous measures must be taken in Eire. It is advocated that attention should be first directed to mastitis, infertility, contagious abortion, parasitism, and TB. For mastitis, the measures recommended are :– (a) For the various types of streptococcal mastitis—udder infusion with or without sulphanilamide treatment or sulphanilamide treatment alone. (b) For *Corynebacterium pyogenes* mastitis—"washing out" of udders as soon as they are "dry" and injection of liquid paraffin and bismuth to seal the teats. The use of toxoid is not advocated at the present stage. Research is necessary to determine the bacterial flora of normal and diseased udders, the predisposing causes of mastitis, the factors responsible for the varying incidence of summer mastitis, the mode of infection, the actual infecting agent, the value of various recommended treatments, and the means of prevention.

Infertility, especially that due to trichomoniasis, is prevalent in Northern Ireland, due in large measure to the communal bull system. An average of 10% of cows are disposed of annually on account of sterility. In addition, about 30% of cows show temporary infertility. It is estimated that the annual loss from infertility is about £600,000. As a means of dealing with the situation, it is advocated that all known or suspected cases of infective infertility in cows should be treated by irrigation, and that in districts where trichomoniasis is the main problem, artificial insemination centres should be set up and the use of the communal bull disallowed. Temporary infertility should be treated by feeding balanced rations and by hormone administration where necessary.

Contagious abortion is widespread and an experimental scheme following American recommendations is advocated for control. Under the scheme, it is proposed that calfhood vaccination should be compulsory, all vaccinated animals being blood tested 30 days after vaccination and if necessary, re-vaccinated to ensure a positive reaction. In addition, all non-pregnant adult females, negative to the agglutination test, should be vaccinated.

The Compulsory Tillage Order is regarded as providing a good opportunity for instigating control measures against parasites. The best measures comprise the reservation for young stock of new grazing after cropping and systematic anthelmintic dosing to prevent

a build-up of infection on clean ground, other suitable measures also being made.

Area eradication of TB. on an attested herds scheme is advocated and extension of the T.T. herds scheme.

In order to operate the proposed measures it is considered that compulsion will be necessary and that control and administration should be under the Ministry of Agriculture. It is recommended that the work should be carried out by whole-time officers of the State. The Ministry of Agriculture at present employs 80 veterinary surgeons. This number would require to be trebled for the work to be undertaken. To deal with animals not included in the scheme, a system of State animal hospitals is envisaged, these hospitals eventually becoming part of a comprehensive State veterinary service.

A minority proposal is that stockowners should be allowed free choice of veterinary surgeon and that a panel scheme for veterinary practitioners similar to that operating in Great Britain should be operated by the Ministry of Agriculture.—D. D. OGILVIE.

—. (1941). **Conference on National Poultry Improvement Plan, June 17-20, 1941, in Chicago, Ill.**—pp. 175. Washington, D.C.: Animal Husbandry Division, Bureau of Animal Industry, U.S. Department of Agriculture. [4to] [Mimeographed]. **1119**

This report contains the papers presented and a summary of the discussions at the conference, the purpose of which was to consider administrative problems, means of developing greater efficiency in the operation of the National Poultry Improvement Plan, and fundamental breeding and pullorum disease control problems. Some of the papers have been abstracted separately.—R. F. GORDON.

—. (1942). **Proceedings of the Twenty-eighth Indian Science Congress, Benares, 1941.** pp. Pt I 60, Pt II 426, Pt III 306, and Pt IV 308. Calcutta: Indian Science Congress Association. [8vo]. **1120**

Part I deals with administrative matters, part II comprises presidential addresses, part III gives abstracts of papers read, and part IV contains abstracts received too late to be included in Part III, discussions, list of members, and an index to all four parts. The following items are of interest to veterinarians.

MAHAJAN reported an outbreak of equine encephalomyelitis among police horses in Hyderabad-Deccan; twelve of 21 affected horses died and "carriers" prolonged the outbreak for over 10 months. MEHRA transmitted haemorrhagic septicaemia to rabbits through the bites of fleas (*Ctenocephalus felis*). DATTA cultivated *Rhinosporidium seeberi* of human origin and assigned it to the aspergillus group. RAJAGOPALAN failed to obtain any toxin from *Corynebacterium equi* in cultures.

BHALERAO recorded *Paramphistomum ovimagnosum* as a facultative intestinal parasite of the dog in Calcutta. AMIN compared a new unnamed species of *Avitellina*, found in sheep, with others in the genus. BHALERAO described *Subulura minetti*, n. sp. from the intestine of an Indian fowl. He also recorded *Camelostrongylus mentulata* from sheep and goats and *Haemonchus longistipes* from sheep. KUPPUSWAMY described the free-living stages of *Mecistocirrus digitatus*; the third stage was infective and could live in cultures for two months. SONI found that 1–5% soil moisture was optimum for the pupal development of *Hypoderma lineatum* in the laboratory and that no pupae emerged when the soil contained 15% or more of moisture. SONI and BAWA found *H. lineatum* to be common in cattle in Sind and *H. crossi* to be common in goats of certain districts. RAHMAN and ANSARI reported nine species of Mallophaga as attacking fowls in the Punjab and outlined the life-history of *Lipeurus heterographus*. BHATIA reported the occurrence of leeches (*Limantis* sp.) in the air-passages of domestic animals.

SESHAN and K. C. SEN found that atmospheric oxygen played an important part in the destruction of carotene in fodders. BAGCHI and DAS-GUPTA reported the carotene content of cow ghee [clarified butter] to be 20–45 times the maximum of buffalo ghee. ANANTHAKRISHNAN found that the milk of the ass was richer in vitamin C than cow's milk.

RAU, in his presidential address to the Zoology Section discussed the various morphological types of mammalian placenta and the metabolic exchange taking place through them.—M. ABDUSSALAM (INDIA).

—. (1943). **Proceedings of the Twenty-ninth Indian Science Congress, Baroda, 1942.** pp. Pt I 52, Pt II 374, Pt III 256, and Pt IV 227. Calcutta: Indian Science Congress Association. [8vo]. **1121**

MAHAJAN recorded intestinal and pulmonary tuberculosis of the elephant caused by bovine type bacilli. RAJAGOPALAN reported a case of pseudotuberculosis caused by *Pasteurella pseudotuberculosis*, group I, in a goat. GOPALKRISHNAN reported *Salmonella typhimurium* infection in pigeons. GUPTA reported on the paramphistomid parasites of cattle in Lahore; *Paramphistomum cervi* was common, *P. explanatum* and *P. crassum* being rarer. AMIN discussed the taxonomy of *Avitellina* (Cestoda) and proposed that *A. southwelli* Nagaty and *A. sandgroundi* Woodland be considered synonyms of *A. centripunctata*. BHALERAO and KALAPPAH found 21 species of helminth parasites of domestic animals in Coorg, of which *Trichuris leporis* was new to India. SAPRE outlined the life-histories and bionomics of the ticks *Rhipicephalus sanguineus*, *Haemaphysalis bispinosa*, and *Ornithodorus papillipes*.

S. N. RAY found 2–3 times the normal amount of fluorine in the teeth of cattle showing osteomalacia-like symptoms and nearly 6–10 times the normal content in water from affected areas. BAGCHI and GANGULY found yanogenetic glucocides in the roots, stem, and leaves of maize at various stages of growth before flowering and discussed the significance of HCN in plant nutrition.

SESHAN and K. C. SEN studied the carotene content of some green and dry fodders and the factors inimical to it; in hay-making and storage, carotene was rapidly lost through oxidation. K. C. SEN and SARKAR reported a marked wastage of carotene fed to cows; only a very low percentage was excreted in milk. BASU and MUKERJEE found the total phosphorus in cow's, goat's and sheep's milk to be 100 mg. per 100 ml., in buffalo's milk 125 mg., and in human milk 30 mg.

MULLICK and PAL found the haemoglobin, iron, calcium, magnesium, inorganic phosphorus, and sugar contents of the blood to be higher in calves than in adult cattle, but they did not differ in dry, pregnant, and lactating cows of three breeds.—M. ABDUSSALAM.

MÜSSEMEIER. (1944). Präsident Professor Dr. Dr. h. c. O. Waldmann 25 Jahre Leiter der Forschungsanstalt Insel Riems. **[Professor O. Waldmann, Head of the Research Institute, Island of Riems, for 25 years].** —*Z. InfektKr. Haustiere.* **60.** 245–258. **1122**

A review of the development of the Foot and Mouth Disease Research Institute, Riems, and of the work undertaken there since the appointment of WALDMANN as Director in 1919. At that time the only accommodation available was a small farm with a single-storied building which had to serve as laboratory and dwelling house, with a stable for the experimental animals. The present extent of the buildings is not fully disclosed, but they are described as including 12 large, modern laboratories, housing for about 800 large animals, and various other buildings provided for the purpose of serum and vaccine production. A cable

railway connects the island with the mainland and the difficulty of maintaining an adequate water-supply has been met by the construction of a waterworks on the mainland.

In recent years, the most important part of the work has been in connexion with active immunization. In 1938, WALDMANN & KÖBE [*V. B.* **9.** 17.] claimed to have found a satisfactory solution to the problem in the use of their aluminium hydroxide adsorbate vaccine. In a trial of this vaccine in 1939 in East Prussia, outbreaks of the disease occurred on 2% of the farms in districts where the vaccine was used, compared with 50% in neighbouring districts where the vaccine was not used. Since then many millions of cattle have been vaccinated. This has led to the necessity for a greatly increased production of vaccine, with the proposed establishment of six or seven new centres of production for Germany. One of these centres is already in production and three others have been improvised by using existing abattoirs or cattle yards. A centre is also being erected for supplying Bohemia and Moravia.

With the establishment of these extra centres of vaccine production, it was essential that all their work should be co-ordinated from Riems; for this reason, in April 1943, the Riems Institute became known as the Reich Research Institute, Island of Riems.

Other virus diseases have been investigated at the Institute as well as F. & M. disease, namely, swine fever, swine influenza, infectious bronchitis of horses and cattle, vesicular stomatitis, and fowl plague.—W. M. H.

—. (1944). **Metric system adopted [by the Council on Pharmacy and Chemistry of the American Medical Association].**—*N. Amer. Vet.* **25.** 138–140. **1123**

This Council announces that *New and Unofficial Remedies*, *Useful Drugs* and the *Epitome of the U.S. Pharmacopoeia and National Formulary and Interns' Manual* (with the consent of the Council on Medical Education and Hospitals), as well as other Council publications, will hereafter give quantities and dosages exclusively in the metric system. Necessary conversion tables will be printed in each volume.—H. E. BYWATER.

I. DAVID & MÜNCHBERG. (1943). Betrachtungen über Wehrmachtskonserven vom tierärztlichen Standpunkt. **[Observations on "military containers" from the veterinary point of view].**—*Z. Veterinark.* **55.** 213–225. **1124**

II. MERKLE. (1943). Betrachtungen über Wehrmachtskonserven vom chemischen Standpunkte aus. **[Observations on "military containers" from the chemical point of view].**—*Ibid.* 226–241. **1125**

I & II. These two articles give an extended comparison of the manufacture, use, efficiency, and relative cost of established types of metal food containers with the so-called "military containers" now largely used for packing German military stores. These "military containers" are made of ironplate, lacquered over the whole inner surface by a new process which obviates the soldering of the rim. The varnish used is more satisfactory than that used in older types of ironplate containers, and "military containers" are, therefore, suitable for a wider range of foodstuffs and storage conditions than were the older types. A completely satisfactory varnish, however, has not yet been developed, and both types of container, like aluminium, are dangerous for milk, vegetables and fruit, pickled meat, and fish without oil, *i.e.*, strongly acid or salted foods. Such foods should be packed in tinplate, or if ironplate must be used, an especially good varnish is required. Hot-dipped tinplate withstands corrosion better than similar "cold-process" containers, and is to be recommended for valuable stores, especially if these must be kept for long under adverse conditions. For very difficult storage conditions, *e.g.*, in the tropics, the most satisfactory container is hot-dipped tinplate lacquered both inside and outside; in order to reduce corrosion as far as possible, the use of acid materials, and of salts such as cooking salt, nitrates, and nitrites, must be kept to a minimum.—O. CRUSE.

JONES, M. P. (1944). **Extension entomology activities in wartime.**—*J. econ. Ent.* **37.** 354–356. **1126**

This is a brief review of the wartime activities of the agricultural entomology services in the U.S.A. During the war of 1914–18, several thousand entomologists were assigned to the Food Production organizations, but no such arrangement has so far been made in the present war. Speaking generally, the entomological services have suffered considerably from the calling up of trained personnel. For instance, 22% of the county agents and their assistants have been called up and replaced by less experienced people. A shortage of important insecticides has further lessened the efficiency of control measures. On the other hand, great increases have been made in the educational side of pest control. One wartime development of great value has been the institution of surveys to assess the occurrence and abundance of certain pests. These surveys have resulted in a more efficient distribution of the available insecticides.—J. B. CRAGG.

YUSHOK, W., & BEAR, F. E. (1943). **Poultry manure. Its preservation, deodorization, and disinfection.**—*Bull. N. J. agric. Exp. Sta.* No. 707. pp. 11. **1127**

The weight of manure obtained is approximately twice the weight of food consumed by hens. An average ton of fresh poultry manure contains 21 lb. of nitrogen, 16 lb. of phosphoric acid, and 10 lb. of potash. Fresh manure contains nearly 80% water; on drying the manure there is considerable loss of nitrogen. There is heavy loss of nitrogen if manure is allowed to accumulate, and of phosphoric acid and potash if exposed to rain. Treatment with superphosphate was found most effective for preventing loss of nitrogen; at least 100 lb. per ton were needed to give satisfactory results. If manure is dried, there is again loss whether the manure has been treated or not.

100 lb. of hydrated lime per ton of manure was used as a deodorizing agent. 200 lb. of hydrated lime per ton of manure had a bactericidal effect on *Salmonella pullorum*, *S. typhi-murium*, *S. gallinarum*, and *Pasteurella aviseptica* within 15 min.—E. J.

BOGUE, J. Y. (1944). **Scientific films for biological and medical purposes.**—*Lancet.* **247.** 296–298. **1128**

Very detailed advice and instructions are given relating to the production of scientific films.

B. divides all films into two main groups, those which merely present known facts and those which contribute to our knowledge of the living processes or to scientific techniques. To get the best results, a professional firm should be engaged. Before a single foot of film is exposed, everything should be cut and dried, the script written, camera angles, lighting and exposure tests and experimental procedure, all tested and agreed upon. Whatever criticism there is is best dealt with at the script stage and before any shot has been completed.

There are advantages in accelerating or slowing the rate of "shooting" in order to demonstrate points more clearly.

Technical points are discussed, such as the danger of exposing biological subjects to undue heat.

Cinema films should not be used where lantern slides or static projection are adequate.—N. S. BARRON.

REPORTS

INDIA. (1940). **Report of veterinary work by the Baluchistan Agency, 1938-39.**—*Adm. Rep. Baluchistan Agency, 1938–39.* pp. 27–28, 116–120 & 124. [See also *V. B.* **12.** 625–628, and following abst.]**1129**

The staff consisted of one deputy superintendent-in-charge and 14 veterinary assistant surgeons of whom ten were in charge of dispensaries. The cost of the department was Rs. 51,895/–.

The number of cases treated both in the hospitals and on tour was 97,640. Deaths from contagious diseases numbered 4,708, and were mainly from ANTHRAX and goat MANGE. Preventive inoculations against ANTHRAX and BLACKLEG were carried out on 1,196 animals.—M. R. DHANDA (INDIA).

*INDIA, BALUCHISTAN. (1943). **Annual report of the Civil Veterinary Department, Baluchistan, for the Year 1940-41.** [SHAH, J.] [See also preceding abst.]. **1130**

The staff consisted of one Deputy Superintendent and 14 veterinary assistant surgeons. At the ten dispensaries, 44,517 animals were treated as against 39,808 in the previous year. Also medicine was given for 14,725 sick animals and 440 castrations were performed. Out of 218 reports of outbreaks of contagious diseases, 211 were attended, and 1,432 preventive inoculations were made.

Twenty stud bulls were maintained and 730 cows were served by them during the year. 114,982 sheep and goats and 2,356 cattle were slaughtered.

The cost of the Department was Rs. 45,150/– and of breeding operations Rs. 3,232/–.

The proposal to start a breeding station for Angora goats in the Hanna valley near Quetta had to be dropped owing to the war. The establishment of a poultry breeding farm at Quetta is under consideration.

—M. K. SREENIVASAN (INDIA).

INDIA, BARODA. (1941). **Annual report of the Department of Agriculture for the year 1939-40.** [MARATHE, Y. N.] pp. 230. [Items of veterinary interest pp. 36–39, 46 & 181–191]. Baroda: State Press. [8vo] [Re. 1–8–0]. **1131**

The Veterinary Section is under the control of the Commissioner of Agriculture, the staff consisting of a Deputy Director, a Disease Investigation Officer, two circle inspectors, and 35 qualified veterinary assistant surgeons. Thirty-four dispensaries and one mechanized touring dispensary were maintained. At these, 30,287 cases were treated and 1,206 castrations done during the year. In addition, the veterinary assistant surgeons and stockmen visited 6,953 villages, treated 33,994 cases, and performed 1,958 castrations. There were 31 outbreaks of RINDERPEST, 26 of HAEMORRHAGIC SEPTICAEMIA, and 247 of FOOT AND MOUTH DISEASE. There was an increase in cattle mortality due to extensive movement of livestock in the State territory as a result of famine in the surrounding areas. 59,279 animals were immunized against RINDERPEST with goat-tissue virus, 26,773 animals received prophylactic vaccination against HAEMORRHAGIC SEPTICAEMIA, and 3,614 were passively protected against H.S. in actual outbreaks.

—C. SEETHARAMAN (INDIA).

INDIA, BENGAL. (1940). **Annual report of the Civil Veterinary Department, Bengal** [ALI, S. M.] **and of the Bengal Veterinary College** [MACGREGOR, A. D.] **for the year 1938-39.** pp. 75. Bengal Govt. Press, [8vo] [Annas 5 or 7d.] [See also following abst.] **1132**

The departmental staff consisted of the Director, the Deputy Director, three assistant directors, the Superintendent of the Vaccine Depot, the Disease Investigation Officer, and 180 veterinary inspectors and veterinary assistant surgeons, the posts of the deputy director and one assistant director having been newly created during the year.

RINDERPEST caused 14,714 deaths in 949 outbreaks, HAEMORRHAGIC SEPTICAEMIA about 3,900 deaths, and BLACKLEG 234. Outbreaks of ANTHRAX were considerably lower, with 1,138 deaths. FOOT AND MOUTH DISEASE was less prevalent.

The total figures for preventive inoculations are given in a table. A large number was carried out against HAEMORRHAGIC SEPTICAEMIA and ANTHRAX and a few hundred against BLACKLEG. 197,503 cattle were given RINDERPEST goat vaccine, 23,731 serum and vaccine, and 2,397 serum alone. In some herds goat-tissue vaccine was reported to produce severe reactions with fatal results and there was evidence of spread of infection to healthy herds from such animals.

Among the diseases studied were BOVINE CONTAGIOUS ABORTION, verminous PNEUMONIA, RINDERPEST, and HUMP SORE. Following introduction into a dairy herd of infected cows from Australia, CONTAGIOUS ABORTION spread rapidly and about 12% of the cows aborted during the first year and 36% in the next year. The abortions, however, declined to about 4%. The incidence of HUMP SORE was comparatively higher in the southern districts.

The Bengal Veterinary College continued to attract students from all parts of India and elsewhere. There were 210 students on the roll of the College during the year, and 53 qualified.

Routine diagnostic work carried out in the Raymond Research Laboratory attached to the College is described.

The Department of Epizootic Diseases of Animals in Calcutta, which is under the control of the College, dealt with a few outbreaks of GLANDERS, BLACKLEG, and RINDERPEST.—M. R. DHANDA (INDIA).

*INDIA, BENGAL. (1943). **Annual report of the Civil Veterinary Department** [ALI, S. M.] **and of the Bengal Veterinary College** [MACGREGOR, A. D.] **for the year 1941-42.** pp. 39. Alipore: Bengal Govt. Press. [Annas 5 or 7d.] [See also preceding abst. and *V. B.* **12.** 625–629 and **14.** 289–291]. **1133**

The departmental staff consisted of the Director, Deputy Director, three assistant directors, the Superintendent, Veterinary Vaccine Section, the Disease Investigation Officer, 16 veterinary inspectors, and 201 veterinary assistant surgeons.

RINDERPEST still caused the greatest mortality among cattle—11,286 against 23,638 in the previous year. The reduction in the number of outbreaks is attributed mainly to the cyclical variation which appears to reach its peak every 10–11 years. A graph showing the mortality figures for Bengal from 1900–40 illustrates this variation. There were 2,280 deaths from HAEMORRHAGIC SEPTICAEMIA, 1,205 from ANTHRAX, and 115 from BLACKLEG. Other contagious and parasitic diseases caused the death of 3,720 animals. Mortality figures for various diseases of other domestic animals are also given.

Details of preventive inoculations are given in tabular form. Altogether 365,765 animals were protected against RINDERPEST with goat-tissue vaccine, vaccine and serum, or serum alone as compared with 505,403 in the previous year. 28,996 animals were inoculated against HAEMORRHAGIC SEPTICAEMIA, 12,751 against ANTHRAX, and 1,191 against BLACKLEG.

Further investigation on the cutaneous or exanthematous form of RINDERPEST was carried out. The investigation officer also worked on HUMP SORE, HAEMORRHAGIC SEPTICAEMIA and HELMINTHIASIS. For

hump sore, the efficacy of tartar emetic was tried with encouraging results.

There were 213 students in the college at the beginning of the session in July 1941 and 54 qualified The college laboratory did much routine diagnosis work. Ninety out of 116 brains examined for RABIES were positive.

The Department of Epizootic Diseases of Animals in Calcutta dealt with ANTHRAX, BLACKLEG, RINDERPEST, and FOOT AND MOUTH disease. A rinderpest quarantine camp for goats at Alipore Remount Depot was established, the animals being detained for ten days before shipment to Singapore.

—M. K. SREENIVASAN (INDIA).

I. INDIA, BIHAR. (1942). **Annual report of the Civil Veterinary Department, Bihar, for the year 1941–42.** pp. xxxvi. Patna: Superintendent, Govt. Printing. [8vo]. **1134**

II. INDIA. BIHAR. (1944). **Annual report of the Civil Veterinary Department for the year 1942-43.** pp. xxxii. Patna: Superintendent Govt. Printing. 8vo]. **1135**

I & II. Certain activities of the Department and of the Veterinary College, Patna, are shown in tables. Mortality figures from contagious diseases and other causes are given. In 1941–42 the incidence of HAEMORRHAGIC SEPTICAEMIA was the same as in the previous year; ANTHRAX and BLACKLEG increased, but RINDERPEST decreased. 1942–43 was an exceptionally good year for animal health. Details are given of preventive inoculations and of activities of the veterinary hospitals, dispensaries, and of touring veterinary assistant surgeons. The numbers of approved stud bulls and stud buffaloes kept in the province are shown. Figures relating to livestock slaughtered during each year are also given.

The cost of the Department, including the College, was Rs. 6,84,779 for 1941–42 and Rs. 6,96,148 for 1942–43.

The total subordinate staff was 161 during the period under report. There were 128 and 111 students respectively in the College at the close of the sessions, and 37 and 28 respectively passed the final examinations.

—M. K. SREENIVASAN (INDIA).

INDIA, MYSORE. (1940). **Report on the annual administration of the Mysore Civil Veterinary Department for the year 1938-39. With the government review thereon.** [KRISHNIENGAR, K.] pp. 22. [fcp]. **1136**

The staff consisted of the Superintendent, two research officers, four divisional officers, and 99 veterinary inspectors.

BLACKLEG was less severe than in the previous year and caused 3,642 deaths; 1,700 outbreaks were attended and 118,388 animals given prophylactic inoculations. ANTHRAX was fairly widespread and was responsible for 2,411 deaths; there were 1,440 outbreaks and 23,525 inoculations were made. HAEMORRHAGIC SEPTICAEMIA caused 887 deaths; there were 488 outbreaks and 23,525 animals were inoculated against it. Rinderpest occurred more extensively than in the previous year and caused 2,520 deaths; 332 outbreaks of the disease were attended and 101,002 animals inoculated. SHEEP POX and PLEURO-PNEUMONIA were the two commonest diseases of sheep and goats respectively.

Three methods of inoculation against RINDERPEST were used, *viz*, serum alone, serum-simultaneous, and goat virus alone. For BLACKLEG use was also made of three methods, *viz*, filtrate alone, filtrate and serum, and bacterin. A new saponin vaccine against ANTHRAX gave encouraging results, being safe and effective even for newly born lambs and kids; the scope of its application is being explored.

The number of dispensaries, etc., rose from 75 to 79 during the year. 355,888 cases were treated, 31,081 castrations were performed, and 22,438 surgical operations conducted.

The staff on tour visited 15,179 villages where they treated 82,202 cases, performed 52,146 castrations, and conducted 1,792 surgical operations.

Special investigations were made regarding the efficacy of a FOWL-POX vaccine, the extent of JOHNE'S DISEASE in the State, and the cause of an INFECTIOUS FELINE GASTRO-ENTERITIS.—D. B. MUKHERJI (INDIA).

INDIA, UNITED PROVINCES. (1940). **Annual report of the Civil Veterinary Department, for the year 1938-39.** [EGAN, T. J.]. pp. iii + 42. Allahabad: Superintendent, Printing & Stat. [8vo] [6 annas]. **1137**

The staff consisted of three circle superintendents, one veterinary investigation officer, and 231 veterinary inspectors and veterinary assistant surgeons. The total cost of the Department was Rs. 3,67,700.

Epidemics among livestock were severe, total deaths due to contagious diseases being 44,992, of which 27,360 were due to RINDERPEST and 12,002 due to HAEMORRHAGIC SEPTICAEMIA.

194,805 cattle were immunized against HAEMORRHAGIC SEPTICAEMIA, 21,324 against BLACKLEG, and 8,569 against ANTHRA–. 316,091 cattle were immunized against RINDERPEST, 279,192 being inoculated with goat-tissue virus, 24,307 with serum alone, 6,381 with serum and virus, and 5,761 by the scarification method of inoculation with chloroformed or unchloroformed goat-tissue virus.

529,761 animals were treated at the 192 dispensaries and 125,571 scrub bulls were castrated.

Attempts were made to attenuate further the goat-tissue virus by treating the macerated spleen pulp with chloroform vapour, for immunizing buffaloes by the scarification method. As a prophylactic against SURRA a single dose of 1 g. of naganol was found to protect horses and mules during the surra season.

—M. R. DHANDA (INDIA).

KENYA. (1942). **Annual report of the Veterinary Department 1941.** [DAUBNEY, R.] pp. 16. Nairobi: Govt. Printer. [8vo]. **1138**

The year as a whole was favourable to stock farming and the local demand for all livestock produce remained high.

Fifty-eight outbreaks of ANTHRAX were reported in the settled areas. There was no change in the position in the native reserves. 181 outbreaks of BLACKLEG were notified; the increased incidence is attributed to heavier rains. 80,000 doses of vaccine were used in the native areas. Four outbreaks of HAEMORRHAGIC SEPTICAEMIA were reported.

Losses from TRYPANOSOMIASIS were on a large scale. In infected areas there was a disturbing increase in numbers of tsetse flies, and considerable dispersal from permanent fly belts. Shortage of therapeutic agents occurred during part of the year.

There was an outbreak of BOVINE CONTAGIOUS PLEURO-PNEUMONIA in the settled areas; the disease appeared to be spreading in the native areas. There was an increase in the incidence of RABIES [species affected not mentioned]. Thirty positive cases were found in the settled areas, while in the native reserves most of the cases were in the Central and South Kavirondo reserves. Sixty-five outbreaks of RINDERPEST were reported, mainly due to the unauthorized movement of native-owned cattle or to contact of cattle with infected game. Inoculations were carried out—22,967 with

attenuated virus, 5,555 with vaccine-virus, 1,881 with serum-virus, 898 with vaccine only, and 377 with serum only. There was an increasing use of desiccated attenuated virus in the control of the disease. Kabete attenuated goat virus, known as K.A.G. virus, was used on a large scale in Tanganyika Territory, over two million doses being used during the year. It is sold at a cost of £1 per 1,000 doses. The southward spread of rinderpest was checked by the immunization of the cattle in the Southern Province of Tanganyika. Mass immunization was not possible among native-owned cattle in Kenya owing to fees being charged. There were extensive outbreaks of FOOT AND MOUTH DISEASE in a mild form. Eight cases of AFRICAN HORSE SICKNESS were reported, the mortality being 75%. Only five outbreaks of SWINE FEVER were reported. There was one outbreak of ULCERATIVE LYMPHANGITIS and one of EPIZOOTIC LYMPHANGITIS.

Laboratory Services

The production of sera and vaccines was the main task; 2,491,555 doses of attenuated RINDERPEST goat virus were produced. The total revenue amounted to over £29,000. 6,618 specimens were examined; 358 dip samples were tested and 1,670 butter fat tests were made.

Research

A new form of ACTINOBACILLOSIS was found in a herd of high grade, pure-bred Friesian cattle. Infection was in the submaxilliary and adjacent glands, causing fibrous growths up to the size of a cricket ball. Iodine treatment had no effect. The growths were removed surgically and treatment with sulphapyridine cleared up the condition.

Phenanthridinium compound at a dose of 0·5 mg. per kg. body weight failed to cure three cattle infected with *Trypanosoma congolense*; at 0·75 mg. per kg. it cured one of three animals treated; at 1·0 mg. per kg. five of eight animals were cured; at 1·5 mg. per kg. one of three was cured, and at 2·0 mg. per kg. three of four treated were cured. Treatment of relapsed cases was unsatisfactory. There was a possibility of drug-fast strains of the parasite being produced. Stibophen, but not congasin, cured cases relapsed to phenanthridinium compound. Stibophen gave uniformly satisfactory results with *T. congolense* and *T. vivax* infections when four injections at weekly intervals were given; this number of injections is a disadvantage in dealing with native-owned cattle.

Four strains of RINDERPEST goat virus were maintained by serial passage; the Kabete strain (K.A.G.) was in its 470th passage by the end of the year. Tests by SIMPSON on the effects of the storage of rinderpest goat virus under conditions other than *in vacuo* showed that when storage of dried virus was in small, corked and waxed tubes in the refrigerator, the viability was well maintained up to 8 days and loss of virulence during subsequent exposure at room temperature was progressive but not unduly rapid. The virus retained its infectivity in a 1 : 500 dilution up to 119 days. In tests of the K.A.G. virus in giraffes and buffalo there was no reaction.

HUDSON's studies showed the infective agent of MALIGNANT CATARRH to be fragile. It does not survive repeated freezing and thawing. An infective tissue suspension begins to lose infectivity by the 12th day when kept at 40°C., but there is no loss in the first seven days. Injections of hyperimmune serum do not affect the incubation period or the course of the disease whether given when virus is inoculated or later.

Experiments suggest that sheep and goats are immune to scarification with COW POX virus, and that the sheep so inoculated remain susceptible to SHEEP POX: calves do not react to sheep pox, but goats do react, sometimes fatally: calves do not react to GOAT POX virus but sheep may react mildly and acquire some immunity.

Tests made by SIMPSON on the effect of splenectomy on immunity to virus diseases showed that there was a resistance to infection in four splenectomized calves inoculated with formalinized RINDERPEST vaccine and given rinderpest virus eight days later. Attempts to infect splenectomized calves with the viruses of NAIROBI SHEEP DISEASE and with a mild strain of BLUETONGUE failed.

Further experiments were carried out by SIMPSON and HUDSON on the susceptibility of wild rodents and small carnivores to HEARTWATER. In no case could virus be recovered 14 days after inoculation. Sheep inoculated with blood or organ suspensions of a mongoose or of genets showed a temperature reaction commencing after the 6th–8th day and lasting for two days or more. This infection could be transmitted to sheep in series, but did not cause death and was immunologically distinct from heartwater. MASON and ALEXANDER obtained similar results when attempting to infect ferrets with the disease.

PURCHASE obtained some positive results with an antigen used to detect animals infected with BOVINE CONTAGIOUS PLEURO-PNEUMONIA. It is not, however, possible to detect 100% of the infected cattle in an infected herd.

FOTHERINGHAM continued his investigations on EAST COAST FEVER. Mortality among native-owned calves was found to be higher than is generally recognized. The calf's resistance appears to be "dependent upon the survival of the immune mother".

Identification of specimens of ticks received from East African territories was carried out. The value of arsenical preparations in tick control was shown by local investigations to be far greater than that of derris and its derivatives, rotenone and "derrisine". This is particularly the case with *Rhipicephalus appendiculatus*. Large extensions of fly belts resulted in heavy mortality from TRYPANOSOMIASIS among cattle in some areas.

Details are given of the research work carried out at Naivasha Experimental Station on the storage of sperm and of other studies in progress. Sperm for artificial insemination can be safely stored for 72 hours.

There was a large increase in the value of animal products marketed.—J. A. GRIFFITHS.

NORTHERN RHODESIA. (1943). **Veterinary Department. Annual report for the year 1942.** [FERN, E. T.] pp. 9. Lusaka: Govt. Printer. [fcp] [1s.] **1139**

Sporadic outbreaks of ANTHRAX and BLACKLEG occurred, but the diseases were kept under control by prophylactic vaccinations. TRYPANOSOMIASIS continued to be a problem in various parts of the territory. In one outbreak, 1,300 cattle were involved with a large proportion infected. Mortality in pigs due to *T. simiae* infection occurred in the copper-belt quarantine area. Regular dipping kept HEARTWATER, ANAPLASMOSIS, and PIROPLASMOSIS under control and losses were not high. FOOT AND MOUTH DISEASE occurred in April on a farm in the Lusaka district and spread to three adjoining farms. 1,600 animals were infected. The 11,693 cattle on 33 adjoining farms were inoculated by the intramucosal method described in the 1941 report. In July, 843 animals were involved in an outbreak in the Mazabuka district and were inoculated. The disease spread later to the adjoining African reserve and 20,600 animals were inoculated. The restrictions had been removed by the end of the year. BOVINE CONTAGIOUS PLEURO-PNEUMONIA was still confined to the Barotse Province. 191,574 cattle were given Kabete vaccine, strain no.

8,471; reactions were few and mortality very low Very few active cases were encountered. The Australian V.5 strain was used experimentally on adult cattle previously inoculated and in calves; no reactions occurred. No further work with the strain was done.

Other diseases mentioned in which the situation remained unchanged are BOVINE CONTAGIOUS ABORTION, RABIES, MANGE and SENKOBO SKIN DISEASE. No other outbreak of a scheduled disease occurred during the year.

Details are given of the Mazabuka quarantine and of the marketing of livestock and poultry. The cattle census figure was 642,959 head.

A start was made in veterinary education by training 18 African veterinary assistants, class B and posting them in the reserves. Buildings had not been provided by the end of the year.

REPORT OF THE VETERINARY RESEARCH OFFICER [LE ROUX, P. L.]—Research work was interrupted as the one professional officer was employed on field work during half the year. Laboratory routine investigations included the examination of blood and lymph node smears, of various morbid specimens, and of samples of soil and animal ingesta submitted for arsenic tests.

The herd of indigenous cattle used for improvement by mating with selecteds ires consisted of 1,165 head, and the mortality from all causes was just over 2·5%.

Inoculation of calves [no details concerning vaccine used] since 1933 against BOVINE CONTAGIOUS ABORTION has proved satisfactory. From data available the immunity conferred appears to last less than 2–3 years. A naturally acquired infection does not confer a lasting immunity.

T. simiae was the cause of an outbreak of TRYPANOSOMIASIS among pigs. It was also found in a mixed infection with *T. congolense* in an ox. *T. simiae* appeared to be transmitted among pigs by tabanids and by *Stomoxys*. Antimosan given in two 40 ml. doses intramuscularly at an interval of seven days sterilized the infection in the blood of a 150 lb. pig.

In the naturally infected cases of FOOT AND MOUTH DISEASE in the Lusaka area, the lesions were mild in some animals but severe in others; the heavier animals appear to develop the more severe foot lesions. An outbreak of RABIES was diagnosed among calves. Heavy losses occurred in the Lusaka and Mazabuka districts from HEARTWATER. Immunity acquired after an attack of the disease is not permanent and appears to be lost when animals are protected by dipping against continual reinfection through bites of the bont-tick [*Amblyomma hebraeum*].

Details are given of the work on helminthology and entomology. In a test with commercial phenothiazine powder, emulsified in raw linseed oil, and given to sheep infested with wireworms [*Haemonchus contortus*], nodular worms [*Oesophagostomum*], and hookworms [*Bunostomum trigonocephalum*], the results were less effective than with the standard nodular worm remedy.

Mortality among calves from SWEATING SICKNESS was highest in the rains. The first symptom noted is a stiff gait. Death appears to result from toxins absorbed from the skin and the broncho-pneumonia which often occurs in such cases. The disease is more prevalent in swampy areas and in nearby paddocks. The bont-legged tick [*Hyalomma aegyptium*] was very prevalent in the areas of infection. Blood inoculations do not appear to transmit infection to healthy calves. Transmission occurs within 7–10 days after a healthy animal has entered an infected area, but not when the animal is placed in a building with infected calves. Intravenous injections of formalin have proved useful in treatment.

"SUMMER DIARRHOEA" of young cattle is described as a blood-stained diarrhoea which occurs when a break in the early rains causes wilting of the young grass. A muco-enteritis is found on P.M. examination.

—J. A. GRIFFITHS.

NORTHERN RHODESIA. (1944). **Veterinary Department. Annual report for the year 1943.** [HOBDAY, J.] pp. 8. Lusaka: Govt. Printer. [fcp] [1s.] **1140**

Conditions for livestock were generally satisfactory and economically the year was a favourable one for the industry. There was no serious epizootic. There were two outbreaks of ANTHRAX, and BLACKLEG caused more mortality than any other bacterial disease. BOVINE CONTAGIOUS ABORTION was enzootic. All cattle in Barotse Province were vaccinated against BOVINE CONTAGIOUS PLEURO-PNEUMONIA; only two outbreaks were reported. 5,000 carriers ("lungers") were purchased by Government for slaughter as part of the eradication campaign. The incidence of TRYPANOSOMIASIS appeared to be increasing among cattle; losses were becoming more serious. HEARTWATER and REDWATER caused some losses; dipping materials were in short supply. Three cases of RABIES were confirmed.

The research staff was engaged mainly on routine diagnosis and observation of the results of vaccination against BOVINE CONTAGIOUS ABORTION and BOVINE CONTAGIOUS PLEURO-PNEUMONIA. Vaccination against contagious abortion with *Brucella abortus* strain 19 produced no ill-effects and, judged by the results of the agglutination test, produced a high degree of immunity within 14 days of vaccination. No ill-effects were observed in six pregnant animals so treated. With BOVINE CONTAGIOUS PLEURO-PNEUMONIA vaccinations, the indications are that immunity does not last long, particularly in young stock, but that repeated inoculations should finally suppress the disease.

An African veterinary assistants' course of two years was started at Mazabuka; 20 students were in attendance.—J. A. GRIFFITHS.

U.S.A. MICHIGAN. **Report of the Division of Veterinary Science, Michigan State College of Agriculture and Applied Science, East Lansing, 1943.** [GILTNER, W.] pp. 56. [8vo]. **1141**

There were 296 veterinary students enrolled and 54 graduated.

DEPARTMENT OF ANIMAL PATHOLOGY [HALLMAN, E. T.]—699 autopsies were carried out and 2,950 specimens examined; a table shows the results. The pathologist for the Department of Agriculture (RUHLAND) made 37 autopsies, examined 230 specimens, and made 133,315 blood tests for BRUCELLOSIS and 13,384 milk tests for MASTITIS. 3,034 clinical cases were dealt with and 360 vaccinations given.

DEPARTMENT OF SURGERY AND MEDICINE [HULTO, J. P.]—The hospital treated 3,901 cases and the ambulatory clinic 9,148 cases. These consisted of 789 horses, 7,314 cattle, 764 sheep, 633 pigs, 3,322 dogs, 211 cats, 8 goats, 4 rabbits, 1 mule, and 3 birds.

EXTENSION SPECIALIST IN ANIMAL PATHOLOGY [KILLHAM, B. J.]—There has been no expansion in the work of area eradication of BOVINE BRUCELLOSIS. Forty-two counties are involved. The number of blood tests tends to increase. Close touch is maintained with agricultural agents, veterinarians, and owners of infected herds. Co-operation is maintained with state and Federal Government eradication work and assistance is given where needed. There is evidence of continued progress in the control campaign. There has been an increase of five in accredited areas, bringing the total to 26 areas in which the incidence is 1% or less. In other areas there has also been a reduction in the percentage of reactors. The tests carried out by the Bureau of Animal Industry on 187,675 cattle showed

3·8% infected. 126,270 blood tests were carried out in 1942 and there were 5·8% reactors (an increase on the 1941 figure which was 5·07%). The retention of reactors and unwise vaccination tends to keep up the percentage of reactors. The data indicate that more than 50% of herds in the state are infected to some extent with chronic MASTITIS; of 9,701 milk samples, 24·2% contained mastitis streptococci. RABIES, although present, was less troublesome during the year.

Sheep PARASITES have been troublesome; phenothiazine is used as a remedy, particularly against nodular worm. 19,211 horses were treated for PARASITIC INFESTATIONS in 62 counties. Many meetings were conducted to interest horse owners in the subject.

On the assumption that vitamin D might influence the disturbed calcium balance, irradiated yeast was fed to 30 cows with previous histories of "MILK FEVER"; in 22 cows the condition did not recur at the subsequent parturition.

EXTENSION SPECIALIST IN POULTRY HUSBANDRY [WEISNER, E. S.]—8,562 turkeys tested for PULLORUM DISEASE showed 3·25% reactors as compared with 0·518% in 1941. 4,832 birds were received at the laboratory for examination. It is proposed that eventually the bulk of such work should be done by veterinarians. DEFICIENCY DISEASES of poultry were much more prevalent than in previous years; this is attributed to the fact that so much of the availabel animal proteins, such as fish meal, are being used in dog food. Parasitic diseases were also troublesome, particularly *Eimeria necatrix*. *Sarcocystis rileyi* was found in the thigh and leg muscles of two White Leghorn pullets.

Experimental Work

BACTERIOLOGY [HUDDLESON, I. F.]—A brief summary is given of the work in progress on BRUCELLOSIS, compulsory immunization, and studies on the biochemistry of brucella and on swine brucellosis. A collection of brucella cultures is maintained.

The work is described of the departments dealing with MASTITIS AND DAIRY HYGIENE [BRYAN, C. S.], POULTRY DISEASES AND PUBLIC HEALTH BACTERIOLOGY [STAFSETH, H. J.], and PARASITOLOGY [HAWKINS, P. A.].

Of seventy-two students given the intradermal skin test for TRICHINOSIS 5·5% reacted.—J. A. GRIFFITHS.

U.S.A. NEW YORK. **Annual report of the Division of Laboratories and Research, New York State Department of Health, 1943.** [WADSWORTH, A. B.] pp. 121. Albany, N.Y. [8vo]. **1142**

Items of comparative veterinary interest include the following:

A limited epidemic of *Brucella bronchisepticus* PNEUMONIA occurred among g. pigs and caused some deaths. Infection was considered to have been contracted from rabbits. SALMONELLA INFECTION also occurred in several species of laboratory animals and was recorded for the first time in opossum.

Two serum-producing horses died and six were destroyed following marked liver degeneration, rupture of the liver capsule, and subsequent haemorrhage. These animals had been employed in serum production for 1½–5 years. Review of autopsy findings over a number of years indicated that animals used for producing diphtheria antitoxin succumbed most quickly, the average survival time for eight horses being one year and ten months.

An epidermoid CARCINOMA of the left maxillary sinus with metastases to the regional lymph nodes and tissues was encountered in a 20-year-old horse.

Single or multiple sebaceous cysts 0·5–1 cm. in diameter were found in 23 of 55 goats on the sides of the body, neck, or upper parts of the limbs. *Demodex folliculorum* was demonstrated in the nodules.

SCHLEIFSTEIN *et al.* [*V. B.* **14.** 4.] described an organism isolated from glanders-like lesions on the head and neck of human subjects and from the faeces of patients with enteritis, some of whom died. Further study of the organism has shown that while it resembles in certain respects *Actinobacillus lignieresi* and *Pasteurella pseudotuberculosis*, it differs sufficiently from both to warrant classification as a distinct species. Accordingly, it has been named *Bacterium enterocoliticum*. This is confirmed in the present report.—D. D. OGILVIE.

ALGERIA. (1943). Rapport sur le fonctionnement de l'Institut Pasteur d'Algérie en 1942. **[Report on the work of the Pasteur institute, Algeria, in 1942].** [SERGENT, ED.]—*Arch. Inst. Pasteur Algér.* **21.** 89–129. **1143**

Two diseases of pigs were identified as being due to RICKETTSIA INFECTION, *viz*, an acute pericarditis due to *R. suis*, and a benign conjunctivitis which is caused by *R. lestoquardi* n.sp. [see DONATIEN and GAYOT. (1942). *Bull. Soc. Path. exot.* Nov. & Dec. issue—not available in U.K.].

A study was made of the blood of 65 dromedaries in various parts of the Sahara [see also SERGENT & PONCET—*V. B.* **14.** 353].

Tables give (a) details of the 24,480 veterinary specimens examined at the laboratory during the year, and (b) a list of sera and vaccines prepared for veterinary use.

2,659 persons were admitted for anti-rabic treatment during 1942. Anti-rabic vaccine sufficient for the prophylactic vaccination of 5,550 dogs was issued to veterinarians. No case of RABIES has occurred among vaccinated dogs during the past three years.—J. A. G.

BOOK REVIEW

—. (1942). **Handbook on contagious and infectious diseases in animals.** pp. 374. Delhi: Manager of Publications. [8vo]. **1144**

A revised edition of a handbook first published in 1910 and intended as a handy reference book for army veterinary officers serving in India.

A section deals with general bacteriology, immunity, microscopy, and the preparation of material for laboratory examination.

Detailed instructions are given concerning the general measures to be taken for dealing with outbreaks of contagious and infectious diseases, including methods of reporting to military authorities.

The important contagious diseases, the incidence of which must be reported by army veterinary officers, are described in considerable detail, methods of treatment or control being dealt with. There is an account of the parasites of the alimentary tract of horses.

There are three appendixes. Appendix A shows a form of weekly report used for contagious diseases. Appendix B shows the form of report to be used when forwarding specimens for laboratory examination. Appendix C gives lists of materials to be collected and forwarded for laboratory examination for the various disease conditions.

The sections on disinfection and control are likely to be especially useful.—S. J. GILBERT.

See also abst. **947** (annotated bibliography of medical mycology).

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